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ON

PITFALLS IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

Delivered before the North-Western Tuberculosis Society

BY S. VERE PEARSON, M.D. CAMB., M.R.C.P. LOND.,

PHYSICIAN TO THE MUNDESLEY SANATORIUM.

A PITFALL is a trap to catch the unwary. To be wary is to be on the qui vive for dangers. A diagnosis is the recognition in the patient of a known disease from the symptoms which are characteristic of it. When pulmonary tuberculosis is to be defined it is necessary to recognise that, like many another disease, the condition is a process rather than a state, and that the treatment, as of all other diseased conditions, is the treatment of a patient and not of a disease. It is difficult always to realise this in these days of notification, when a patient has to be labelled with a disease by decree from a Government department. Pulmonary tuberculosis may be present yet it may be old and inactive. The important point to recognise is that the presence of the disease must be producing ill-health and must be diagnosed from the history and symptoms. As Dr. F. G. Chandler has said, "If the profession is going to continue to place reliance on physical signs and X rays as a means of diagnosis, countless tragedies will continue to happen."

The commonest symptoms indicating active pulmonary tuberculosis are cough, fever, pain, and lassitude. Dr. I. Struthers Stewart,[1] after examining 200 consecutive admissions to his sanatorium, set out the percentage occurrence of these symptoms as follows: cough 60, lassitude 48, pyrexia 42, hæmoptysis 27·8, loss of weight 12. But he omitted to note pain, which I have found in 70 per cent. It should, therefore, receive greater attention, and is often helpful in arriving at a diagnosis.

For example, a young married woman who was admitted to Mundesley Sanatorium a year or two ago had had repeated pains about the upper part of her left chest which had been labelled muscular rheumatism. The loss of weight she had experienced was ascribed to the vomiting of pregnancy and to mental worry. Many months after her confinement, because of a slight cough with a little expectoration, her chest was examined and X rayed, and this revealed fresh excavations at both apices.

E. E. Prest, investigating the history of hæmoptysis, pointed out some years ago that there was usually three years' delay between the initial hæmorrhage and the admittance to a special institution. If doctors were more regularly trained to ask for a specimen of sputum and to have it examined for *Bacillus tuberculosis* whenever suspicion of pulmonary tuberculosis was present, there would be fewer unwary ones and fewer unfortunates caught in a trap. Students and practitioners do not get sufficiently ample opportunities of seeing tuberculous cases which are relegated to the special dispensary and public institutions in the country. In Manchester, however, as also in Edinburgh and in one or two other places in England—though they are the exception—a tuberculosis expert who is also a servant under the public tuberculosis services is engaged to teach students. Manchester also has the advantage of an expert radiologist, well versed in chest work, as a teacher at the University.

If sputum is persistently negative for tubercle bacilli, especially if it is profuse, and the fingers are clubbed, bronchiectasis must be thought of. An intratracheal injection of lipiodol will clear up the diagnosis.

Once in the last 25 years I have known a case of bronchiectasis in which tubercle bacilli were reported to have been found in the sputum on one occasion. Yet never, over the course of many years, did they recur, nor at any time did any signs or symptoms of tuberculosis appear in this patient. The slight unilateral bronchiectasis was rather difficult to demonstrate because it was on the left side and apt to be masked by the heart shadow. Yet when I established the correct diagnosis it made a great difference to the patient, a young man whose career was being damned by the label of pulmonary tuberculosis. His only symptom had been hæmoptysis; yet he had been condemned to a very restricted and guarded existence. He has now been leading a more or less normal life for some years.

PYREXIA.

Many do not know what constitutes fever, the best method of detecting it, or how to overcome the difficulties of getting careful observations. The best method is to take the temperature per rectum. This is easy in a sanatorium, but difficult for practitioners and tuberculosis officers. If the thermometer is placed in the mouth it should be kept there for at least ten minutes to get a reliable result. A rectal temperature above 98° F. A.M. and above 99·4° F. P.M. should be considered fever, at all events in a man. In most men, in fact, a rectal rest temperature of 98° F. A.M. and 99·4° F. P.M. will be found to be one degree higher than the average temperature of health. One degree lower are readings for oral temperatures. In women it is more difficult to lay down a hard-and-fast-line. In a paper published in 1909[2] I gave illustrations of two women with evening temperatures a good many points above this level. The one was walking some miles daily; the other was confined to bed. The former married, had three children, and died a year or two ago of another cause than tuberculosis. The latter died within a couple of years of tuberculosis. Children are particularly difficult, as their temperatures are more easily upset. Furthermore, pulmonary tuberculosis and other forms of tuberculosis may upset their temperature for months or off-and-on for years, yet between 6 and 16 a majority of children have good resisting powers against tuberculosis. Sometimes tonsils and adenoids are at the root of ill-health which may simulate tuberculosis.

The other causes of fever without definite signs of physical disease which may constitute pitfalls are: (1) nerves; (2) microbic infections, such as endocarditis, lymphogranuloma, dysenteric liver or liver abscess, perinephric infection, bone infection, nasal sinus infection, typhoid, or paratyphoid; (3) malaria, rheumatic fever, coliform infection, or syphilis—these can often be eliminated by the administration of the proper drugs; (4) neoplasms. I am convinced that neurosis alone can sometimes keep a temperature up as much as 1° F.

FEAR OF TUBERCULOSIS AND PHYSIOLOGICAL LASSITUDE.

A trap into which the doctor is all too ready to fall in refusing to diagnose pulmonary tuberculosis is sometimes dug by the patient himself or his relatives. Amongst many there is a fearful obstinacy in admitting tuberculosis. This is largely a relic of the days when to make the diagnosis spelt the doom of the patient. It is also due to an erroneous idea of the infectivity. When patients, and doctors also, learn that early pulmonary tuberculosis is easily curable in a majority of cases, and that it is not infectious in the ordinary sense of the word, this obstinacy ought to disappear.

Another pitfall is due to the fact that lassitude is sometimes due to more or less physiological causes.

Some years ago I had a young professional woman sent to me with signs of slight fibrosis at one apex; her temperature showed a big swing—namely, from 97–99·2° F. Besides being tired she was too thin. These symptoms might have been due to pulmonary tuberculosis, but I thought not. I discovered that her work necessitated her getting up early and that she had been going to bed rather late. One of the causes of her lapse from health was undoubtedly the

[1] See THE LANCET, 1925, i., 927.

[2] See THE LANCET, 1909, ii., 852.

cumulative effect of too little sleep. Under an ordinary sanatorium régime she put on 6 pounds in weight and lost her lassitude without developing definite signs of tuberculosis. Now, four or five years later, I learn that she continues well.

The class of case in which lassitude is the main symptom and the other symptoms and signs are inconclusive constitutes a very difficult and most interesting one. These people, usually too thin, more commonly women than men, may have a little dry cough and doubtful temperature readings. They often have an obstinate anorexia, generally with a clean tongue. I have notes of a number of these cases and have followed up several over periods of many years. Very few of those where I have considered pulmonary tuberculosis absent have developed it later in life, but often they remain rather delicate for a year or two. They must be considered from three aspects (1) the presence of tuberculous lesions which, though healed, may break out again; (2) their general metabolism with special reference to the endocrine system; (3) their psychological make-up and condition.

Endocrine Disorders.

We know that the endocrine glands, associated with the sympathetic nervous system, are concerned with the activation of the body for defence. But we know also that an overacting sympathetic and thyroid, for example, can produce tachycardia, shivering, sweating, calcium loss, and increased metabolism. So if we have such overaction with lassitude and thinness suspicions of tuberculosis may be produced. Early Graves's disease is one of the traps to be avoided, especially since a raised temperature is common in this malady. Short of Graves's disease, however, abnormal endocrine interactions may be the cause of ill-health simulating early pulmonary tuberculosis. In the present imperfect state of our knowledge about endocrine imbalance it is not usually possible to set things right by administering appropriate glandular extracts, but this possibility must always be borne in mind.

I recall a difficult and doubtful patient, who took a year or two to get well. She was a young woman of 19 who received tuberculin injections with benefit about a year after she left the Mundesley Sanatorium. Now, in my belief, she never had pulmonary tuberculosis, though it was difficult to be sure, and I believe the tuberculin probably acted, as it may do in some other cases, by so-called protein shock stimulation of the thyroid adrenal apparatus. She was one of those who find it difficult to grow up and neither her intellectual not her psychical state was stable or satisfactory. To-day, years later, she is happily occupied and in good health.

When more is known about basal metabolic rates, when such observations are more frequently made on sanatorium and other classes of patients, when experience with the careful use of insulin in non-diabetic, but anorexic and thin, or obese and phlegmatic individuals has been gained, and when the use of pituitary and thyroid extracts is more scientific, then it will be not only easier to arrive at a diagnosis in some of these doubtful cases, but also easier to treat them satisfactorily. Again, the connexions between exposure to the sun, or other forms of light, and the adrenals and the pituitary are at present not fully understood. Langdon Brown[3] has said of normal people "we are now justified in saying that climatic environment can modify our psychic 'make-up' through the endocrine glands." Let us hope that still more in the future will it be possible to modify an invalid's mental and bodily condition and bring about health by an appropriate régime which will include, amongst other things, a regulation of the climatic environment, not only by the old-fashioned expensive method of change of air and travel but also by heliotherapy. But until more is known about endocrinology, until more clinical observations and experience have been gathered—e.g., on sun-bathing in England for patients with pulmonary tuberculosis—it is certainly best to proceed along the well-known régime, the common-sense lines of hygienic personal living which are often designated "sanatorium treatment." In most of these difficult cases that line of treatment produces satisfactory results, and it may be that even with enlarged knowledge the short cuts to health will be few, and the basis of successful treatment will probably remain as before.

[3] The Endocrines in General Practice, New York, 1927, p. 105.

Psychotherapy and Radiology.

With all these minor degrees of ill-health of doubtful ætiology it is particularly important to realise that the endocrine upset, or at all events the departure from health, is as likely as not psychical in origin. It may not be necessary with most patients to pry into the causes of an obvious mental discontent. But it is necessary to do this in a discreet and kindly manner in the type of patient now under review, or else the physician will not help much to a rapid recovery. Often an unhappy love affair or some other thwarting, perversion, or aberration of the sex instinct leads to an aimlessness in life which may be associated with many of the symptoms usually ascribed to pulmonary tuberculosis. Again, fear of phthisis or fear of loss of a pension, or the vested interest in being the happy recipient of the results of the diagnosis—perhaps erroneous—of pulmonary tuberculosis, may be the origin of the lapse from good health in body and mind. In many instances doctors have fallen into such traps.

Finally, there are many pitfalls in connexion with the diagnosis of pulmonary tuberculosis through over-reliance on and mistakes in the practice of that very helpful aid to diagnosis—radiology. These can mostly be grouped round the following three causes of mistake: (*a*) incomplete coöperation between physician and radiologist; (*b*) imperfect technique; (*c*) ignorance of what constitutes the normal. Of these, the last-mentioned cause of error is the commonest.

PERORAL ENDOSCOPY.

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JUNIOR SURGEON FOR DISEASES OF THE THROAT AND NOSE AT KING'S COLLEGE HOSPITAL.

THE following is a record of cases treated at King's College Hospital during four years.

Efficient œsophageal and bronchoscopic examinations and operative procedures entail frequent practice, not only by the surgeon, but also by his assistants. To determine whether the number and variety of cases make this possible and desirable is the object for which a record has been kept; the results show that in this hospital there is ample material for all purposes.

TABLE I.

	Ap. 24, 1924, to Ap. 23, 1925.		Ap. 24, 1925, to Ap. 23, 1926.		Ap. 24, 1926, to Ap. 23, 1927.		Ap. 24, 1927, to Ap. 23, 1928.		Total, four years.	
	New.*	Exams.	New.	Exams.	New.	Exams.	New.	Exams.	New.	Exams.
Laryngoscopy	7	13	11	11	5	7	9	13	32	44
Pharyngoscopy	9	10	6	9	6	8	4	4	25	31
Bronchoscopy	4	5	11	34	14	106	14	54	43	199
Œsophagoscopy	42	46	46	55	44	59	44	71	176	231
Total	62	74	74	109	69	180	71	142	276	505

* New cases.

The number of patients for whom peroral endoscopic examinations have been required has remained remarkably constant during the four years beginning on April 24th, 1924, 1925, 1926, and 1927; the figures are 62, 74, 69, and 71 (Table I.). On the other hand, the number of examinations has increased considerably, mainly because of the greater number of bronchoscopies, rising from 5 in 1924 to 34, 106,

and 54 in the three succeeding years. A further cause of increase has been the greater number of œsophagoscopies carried out for treatment of various complaints, the figures being 46, 55, 59, and 71. The year ending April 25th, 1928, shows the smaller total of 142 examinations of all descriptions compared with 180 in the previous 12 months; a decrease in the bronchoscopic treatment of cases of lung suppuration was only partly compensated for by an increase in œsophageal procedures.

Training of Team.

Intelligent and enthusiastic coöperation by registrar, house surgeons, and nursing staff is a necessity; the assistant who controls the position of the patient and the sister or nurse who manages the instruments and swabs must carry out their duties with precision if the operator is to perform his work successfully. Even with a biannual change of senior house surgeon it is possible to maintain an efficient team once the general principles and attention to detail become part of the routine of the clinic. Every house surgeon is, in fact, himself able to pass a bronchoscope on the conscious patient before his term of office is completed. Our junior house surgeon works for six months in the out-patient department, and has opportunities of learning the principles of endoscopy.

Instruments.

At this hospital both Brunning's and Jackson's instruments are used; in almost all cases the latter were found preferable because of facility in sterilisation, lack of clumsiness, the absence of obstruction to the use of swabs, forceps, and other instruments, and the satisfactory arrangements for aspiration of secretions. We find that the lamps of Jackson's instruments are rather delicate, and require frequent attention. An efficient suction pump is a necessity; ours is incorporated in a special bronchoscopic table designed and executed by Mr. Johnston, chief engineer to the hospital (Fig. 1). To protect the eyes a shield has been devised. It consists of a disc of glass which can be rotated so that a clear area is always available.

Anæsthesia.

At King's College Hospital our technique is guided by the teaching of Chevalier Jackson;[1] the well-tested details advocated by him are followed with increasing strictness as time goes on. An example is the greater frequency with which local anæsthesia alone is employed. In our experience the increasing deftness which constant practice gives enables most endoscopic procedures to be carried out without general anæsthesia, to the satisfaction both of the surgeon, and—what is more important—of the patient. Of laryngoscopies, 17 were performed with local and 27 with general anæsthesia; for pharyngoscopies, the figures are 7 and 24; of œsophagoscopies, 111 were under local and 120 under general anæsthesia; and of bronchoscopies, 148 patients had local anæsthesia only, while for 51 a general anæsthetic was thought desirable (total 283 local and 222 general). Morphia, scopolamine, and atropine are given to most of the patients examined under local anæsthesia, but patients who have had two or three examinations usually prefer to have atropine only.

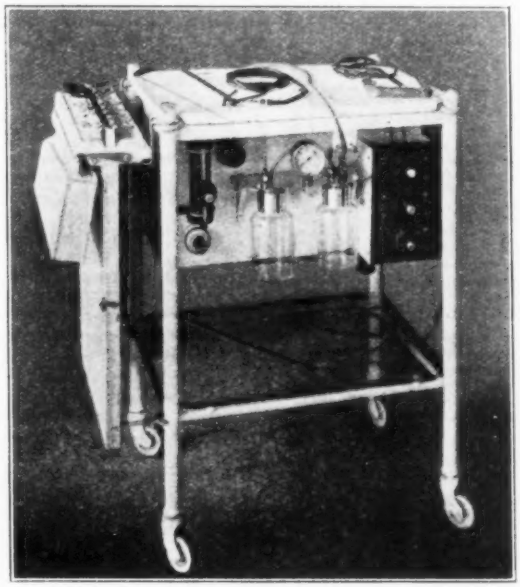
The proportion of those examined under local anæsthetic is increasing as compared with those requiring a general anæsthetic.

Position of Patient.

The Boyce position, as used by Chevalier Jackson, is much preferred in our clinic to the ordinary recumbent or to Mouret's position. The air and food passages can be brought into any desired position; the patient feels less strained; secretions do not overflow into the larynx to cause choking; œsophageal respiration is less; and the discomfort of operative manipulations is lessened. Under local anæsthesia the patient is not held down; he lies still and only needs to have his position maintained by steadying the shoulders. The table, stool, and foot-rest must be at the correct height, a measuring rod being provided to control the position on each occasion.

[1] See THE LANCET, 1926, i., 924.

FIG. 1.—TABLE FOR BRONCHOSCOPY.
(King's College Hospital Pattern.)



The frame of the table is a tubular metal construction, mounted on castors, and has a marble top and a lower shelf. The marble top forms the cover to a sound-proof metal case containing an oil-immersed rotary pump, belt-driven by an electric motor. Mounted on the front of the metal case are two suction nozzles, connected through two bottles with the pump—one bottle for collecting the blood and secretions, the second as an overflow vessel to safeguard against any liquids reaching the pump. On the left is a switch controlling the motor and a rheostat to regulate the speed, the resulting strength of the suction being shown on the vacuum gauge which is fixed between the two bottles. On the right are three circular rheostats to control the lights of the bronchoscopes or œsophagoscopes. The above switch and rheostats are all fitted with specially designed metal tops, easy of detachment for sterilising; they can therefore be handled by the operating surgeon. All these, as well as the bottles, gauge, suction nozzles, and terminals for the lamp connecting wires are protected by the overhanging marble top from accidental damage in moving the table from place to place.

On the top of the table are seen a bronchoscope and laryngoscope, together with suction tubing, which can be attached to the bronchoscope or œsophagoscope, or to an independent suction tube. On the left of the table is suspended a container for the light carriers. This is made in two halves, hinged together at the bottom to open in hook form for access to all parts of the interior for cleaning, &c., and is lined with rubber of such construction that the light carriers are held rigidly in position and are kept sterilised by formalin vapour supplied from tablets placed in the bottom of the container. The whole table is self-contained and freely movable from place to place.

The table has been designed by Mr. Negus and Mr. Johnston, chief engineer to King's College Hospital, and was made in the hospital's works department.

Laryngoscopy (see Table II.).

Removal of papillomata from children made up a considerable number of cases, and for them a general anæsthetic was thought desirable. The next most common cause of laryngoscopy was direct examination for carcinoma of the larynx, either to determine the exact extent of the disease or to take a piece of tissue for microscopy. The latter proceeding is carried out easily and without fear of damage to healthy tissues when Jackson's biopsy biting forceps are used.

Pharyngoscopy (see Table III.).

Diagnosis and treatment of carcinomata made up the greater number; diathermy was used in several

cases through a laryngoscope, and in other cases seeds of radium emanation were inserted.

TABLE II.—*Laryngoscopy.*

—	Ap. 24, 1924, to Ap. 23, 1925.		Ap. 24, 1925, to Ap. 23, 1926.		Ap. 24, 1926, to Ap. 23, 1927.		Ap. 24, 1927, to Ap. 23, 1928.		Total, four years.	
	New.*	Exams.	New.	Exams.	New.	Exams.	New.	Exams.	New.	Exams.
F.B. needle	1	1	—	—	—	—	—	—	1	1
Granuloma	2	2	—	—	2	2	1	1	5	5
Singer's nodes	—	—	1	1	—	—	—	—	1	1
Cyst of epiglottis	—	—	1	1	—	—	—	—	1	1
Laryngeal cyst	—	—	—	—	1	1	1	1	2	2
Papillomata	3	9	5	5	1	2	—	—	9	16
Laryngeal stenosis	—	—	—	—	—	—	1	3	1	3
Carcinoma	1	1	4	4	1	2	6	8	12	15
Total laryngoscopy	7	13	11	11	5	7	9	13	32	44

* New cases.

TABLE III.—*Pharyngoscopy.*

—	Ap. 24, 1924, to Ap. 23, 1925.		Ap. 24, 1925, to Ap. 23, 1926.		Ap. 24, 1926, to Ap. 23, 1927.		Ap. 24, 1927, to Ap. 23, 1928.		Total, four years.	
	New.*	Exams.	New.	Exams.	New.	Exams.	New.	Exams.	New.	Exams.
F.B. pin	—	—	—	—	—	—	1	1	1	1
Fish bone	2	2	—	—	—	—	1	1	3	3
Granuloma	1	1	—	—	1	1	—	—	2	2
Fibroma	—	—	1	3	1	3	—	—	2	6
Carcinoma	3	3	2	2	4	4	2	2	11	11
Diathermy	3	4	1	1	—	—	—	—	4	5
Insertion of radium seeds	—	—	2	3	—	—	—	—	2	3
Total pharyngoscopy	9	10	6	9	6	8	4	4	25	31

* New cases.

Bronchoscopy.

Table IV. shows clearly that experience derived solely from foreign body work will be very limited and quite inadequate to qualify the operator or his team; in the four years five bronchoscopic examinations were made for foreign bodies and 194 for other reasons.

A large shawl pin, a metal clip, and a wood screw were removed without difficulty; the screw was unsuspected and had led to a tentative diagnosis of whooping-cough (Fig. 2). A small black-headed pin offered a difficult problem, as it was lodged in an anterior ventral branch of the right lower lobe bronchus, of a calibre far too small to allow of the introduction of any bronchoscope. A preliminary direct examination made to confirm this supposition is tabulated as "unsuccessful bronchoscopy for F.B." After sufficient practice on an excised pair of lungs under the fluorescent screen in the X ray room the patient was held in such a position that the forceps, when introduced through a bronchoscope into the mouth of the branch known to contain the pin, entered in the axis of the small bronchus; the pin was grasped under guidance of the screen and was removed. A foreign body not included in the list was a swab which became detached during the bronchoscopic treatment of a patient with multiple cavities in the left lung; it was recovered two days later with some difficulty. This bronchoscopy is purposely excluded from the tables as it was a self-made and preventable job.

Since the date on which this report terminated the number of bronchial foreign bodies has increased. An orange-pip has been removed from a child of 4 without any anæsthetic except morphia gr. 1/10th; the pip had been in situ for over a month. Removal of a molar tooth impacted for one month in the left lower lobe bronchus of a child of 7 took a long time and was particularly difficult; general anæsthesia was used. A third child was admitted with a pin in the mouth of the right upper lobe bronchus, but cured itself by coughing out the foreign body. A fourth object is illustrated (Fig. 3).

TABLE IV.—*Bronchoscopy.*

—	Ap. 24, 1924, to Ap. 23, 1925.		Ap. 24, 1925, to Ap. 23, 1926.		Ap. 24, 1926, to Ap. 23, 1927.		Ap. 24, 1927, to Ap. 23, 1928.		Total, four years.	
	New.*	Exams.	New.	Exams.	New.	Exams.	New.	Exams.	New.	Exams.
F.B.: Pin	1	1	—	—	1	1	—	—	2	2
Metal clip	—	—	—	—	1	1	—	—	1	1
Wood screw	—	—	—	—	—	—	1	1	1	1
Unsuccessful for F.B.	—	—	—	—	1	1	—	—	1	1
Granuloma of larynx	1	2	—	—	—	—	—	—	1	2
Irritation by tracheal cannula	1	1	—	—	—	—	1	2	2	3
Fibroma of bronchus	—	—	—	—	1	3	—	—	1	3
Spasm of bronchial muscles	—	—	—	—	—	—	1	1	1	1
Pressure from without	—	—	—	—	—	—	3	3	3	3
Negative for cause of hæmoptysis	—	—	—	—	1	1	—	—	1	1
Dyspnœa due to œsoph. carc.	—	—	—	—	—	—	1	1	1	1
Lung suppuration; unsuccessful attempt	—	—	1	1	—	—	—	—	1	1
Diffuse lung suppuration	—	—	1	4	2	3	—	—	3	7
Aspiration: lung abscess	—	—	1	1	—	—	2	3	3	4
Aspiration: bronchiectatic cavities	—	—	5	21	7	96	5	43	17	160
Irrigation bronchiectatic cavities	1	1	3	7	—	—	—	—	4	8
Total bronchoscopy	4	5	11	34	14	106	14	54	43	199
Total bronchoscopy for F.B.	1	1	—	—	3	3	1	1	5	5
Total bronchoscopy for other causes	3	4	11	34	11	103	13	53	38	194
F.B.'s removed from bronchus	—	1	—	—	—	2	—	1	—	4
F.B.'s removed from œsophagus	—	15	—	11	—	9	—	11	—	46

* New cases.

A highly satisfactory case was that of a lady who was in a sanatorium because of recurrent hæmoptyses; the cause was a fibroma obstructing the left lower lobe bronchus. The case has already been reported by Dr. L. S. T. Burrell and Dr. R. R. Trail, who referred her to me through the kind agency of Sir StClair Thomson. A preliminary bronchoscopy showed a smooth, rounded neoplasm from which a piece was taken for microscopy. After microscopical diagnosis a second bronchoscopy was performed, and the tumour was nibbled away with long cup forceps through a 7 mm. Jackson's aspirating bronchoscope. This tube was preferred to a larger bronchoscope because of its mobility and its arrangement for continuous suction. At a third examination no remains of the fibroma were seen, and up till now there has been no sign of recurrence.

In three or four cases bronchoscopy was performed to confirm or contradict a clinical diagnosis of carcinoma of the lungs, and in each case direct examination gave a correct report.

A patient with œsophageal carcinoma—treated many times with radium—suffered from attacks of dyspnœa, which suggested ulceration into the trachea, but at bronchoscopy no opening was seen; post-mortem examination showed a fairly extensive involvement of the trachea with

hole about 1 inch long. Either the rupture took place after bronchoscopy or else the opening was present and was not seen; the latter alternative, although discouraging, is, I fear, correct.

A case first thought to be one of spasm of bronchial musculature was examined again and proved to be due to pressure on the trachea by an aneurysm of the aorta and innominate artery; two other cases of pressure from without were examined, both apparently caused by mediastinal new growths.

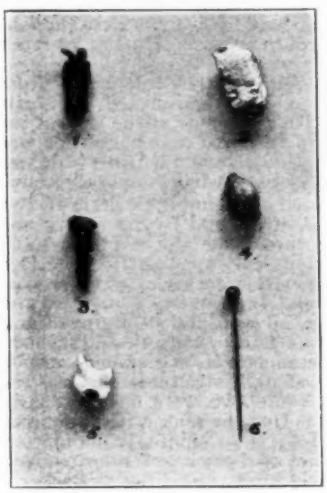
On one occasion the bronchoscope could not be passed owing to the rigidity of the patient; two or three days later and on several subsequent occasions a successful introduction was made under local anæsthetic. Although a general anæsthetic has to be used in certain cases, yet it is far better to dispense with it whenever possible.

Of cases of diffuse suppuration one appeared to have multiple small bronchiectases and was not improved; two others had diffuse bronchitis and were referred for medical treatment.

Of three patients with lung abscess all were cured with ease, thus demonstrating in a limited number of cases that greater success will be achieved when bronchoscopic treatment is commenced early.

One woman who for three weeks had suffered from fever of hectic type following dental extractions was cured after two aspirations combined with local medication, no doubt because of the removal of infected clot associated with efficient drainage and the reduction of granulation tissue: the abscess was in the right upper lobe. A second woman had only one aspiration; she afterwards improved rapidly and left hospital well. High temperature and expectoration of foul pus followed tooth extraction, and her cure was apparently due to the bronchoscopic removal of septic clot. The third patient was a man on whom total laryngectomy was performed; he had considerably raised respiratory rate and high fever commencing on the second day after operation. He was coughing up copious fœtid pus, with signs suggestive of cavitations in the left lower lobe with gangrene of the lung. Through an aspirating bronchoscope stagnant secretions were removed, with almost immediate recovery and the disappearance of the previous physical signs.

FIG. 2.



Foreign bodies removed from bronchi: (1) Metal clip from a toy; mouth of left upper lobe bronchus of boy aged 7 years. (2) Gauze swab; left lower lobe bronchus of a man. (3) Wood screw; top of left lower lobe bronchus of boy aged 4 years. (4) Orange pip; entrance of left lower lobe bronchus of girl aged 4 years. (5) Molar tooth; left lower lobe bronchus of girl aged 7½ years. (6) Black-headed pin; right anterior distal branch of right lower lobe bronchus of woman aged 24.

Cases of bronchiectatic cavity are grouped together whether originating as primary dilatations of one or more bronchi or as the result of bursting of a lung abscess into a bronchus with secondary expansion of the latter. In either case the rationale of bronchoscopic drainage depends on aspiration of stagnant pus, on dilatation of obstructed bronchi, and on reduction of granulation tissue by local applications of 10 per cent silver nitrate. Lavage was tried on a few occasions but appeared to do more harm than good, and instillation of antiseptics seemed to have the same unsatisfactory result. Unfortunately, in not one of the 19 patients with pus-containing cavities was a foreign body found, although constant search was made. All the patients, in addition to bronchoscopic aspiration and local medication, were made to use a Burney Yeo inhaler, to take creosote, and to employ postural coughing. The group comprises 19 patients on whom a total of 168 bronchoscopies was performed; the least number of treatments for any one patient was 1, and the greatest number was 35. Three patients died during treatment—one of mediastinitis as the result of puncture through the cricothyroid membrane for the injection of lipiodol; one, after temporary improvement, from gangrene of the lung connected with extensive cavities; the third from extensive bronchiectatic cavities in the left lower lobe associated with pleurisy and probably empyema. Four patients were temporarily improved by bronchoscopy, but subsequently relapsed. One, who at first showed no signs of tuberculosis had a large infected cavity in the left upper lobe and was very much better after four aspirations, with normal temperature, diminution of sputum, and gain in weight. Three months after leaving hospital he returned with signs of active pulmonary tuberculosis and died soon afterwards. The case was regarded first of all as one of simple bronchiectatic abscess; bronchoscopy is never performed on patients who are known to have phthisis.

FIG. 3.

Metal cap from de Vilbiss spray; removed from right main bronchus of a man (actual size).

Another patient had a big multilocular cavity in the right upper lobe; he was very much improved by weekly aspiration, for which—like most of our other patients—he came up from his home in the morning, returning in the afternoon. He was kept quite comfortable by 30 bronchoscopic treatments over eight months, but then found he could not himself empty his cavity by postural coughing. Artificial pneumothorax was tried, but without success and thoracoplasty was performed, unfortunately followed by death.

Two other patients improved temporarily but relapsed, and bronchoscopy was discontinued. Three cases were unimproved, two being children for whom general anæsthesia was thought necessary; its use no doubt discounted any benefit derived from bronchoscopy. Four patients were slightly improved; one preferred to leave hospital although she might have been wiser to continue treatment; for the others continuance of aspiration did not seem to be indicated. One patient with extensive cavities in the right upper lobe was very materially improved by aspiration and local swabbing with silver nitrate, but finally thoracoplasty was required because of persistent fœtor uncured by bronchoscopy or by the local use of iodoform or gomenol. Three patients have been very much improved. One had fairly extensive bronchiectatic cavitations in the left lower lobe; he had eight aspirations, the last in June, 1926, and has not required any more since. Two other patients have multiple cavities and have kept well enough without further aspiration, one having had 24 treatments and the other 7.

Conclusions regarding Bronchoscopy.

For success in removal of foreign bodies from the bronchi frequent practice in bronchoscopy is required, and can only be obtained by the treatment of cases of lung suppuration, combined with practice on dissected lungs, rubber tubes, and anæsthetised animals.

A definite diagnosis of the presence or absence of a neoplasm of the lung can almost always be made by bronchoscopy. A simple new growth can be removed, even from a secondary bronchus.

Lung abscesses, if early, can be cured by bronchoscopy. Bronchoscopic aspiration of pus-containing cavities in the lungs should be tried in all cases which do not respond to ordinary medical treatment; the use of drugs and postural drainage should always be combined.

Bronchoscopy alone should not be continued if unsuccessful; the patient should be referred for thoracoplasty or other external operation.

Of the series of cases of bronchiectatic cavities recorded 52·6 per cent. were failures, 26·3 per cent. were relieved, and 21·0 per cent. were successes.

TABLE V.—*Œsophagoscopy.*

—	Ap. 24, 1924, to Ap. 23, 1925.		Ap. 24, 1925, to Ap. 23, 1926.		Ap. 24, 1926, to Ap. 23, 1927.		Ap. 24, 1927, to Ap. 23, 1928.		Total, four years.	
	New.*	Exams.	New.	Exams.	New.	Exams.	New.	Exams.	New.	Exams.
F.B.: Negative	5	5	7	10	4	4	7	7	23	26
Unsuccessful	3	3	3	3	1	1	2	2	9	9
Fish bone	3	3	—	—	1	1	2	2	6	6
Meat bone	2	2	2	2	—	—	4	4	8	8
Meat bolus	—	—	1	1	—	—	—	—	1	1
Poultry bone	—	—	2	2	—	—	1	1	3	3
Denture	—	—	2	2	1	1	—	—	3	3
Coin	9	9	3	3	6	6	3	3	21	21
Metal washer	—	—	1	1	—	—	—	—	1	1
Bone button	—	—	—	—	—	—	1	1	1	1
Metal whistle	—	—	—	—	1	1	—	—	1	1
Safety-pin	1	1	—	—	—	—	—	—	1	1
Neg. œs. after F.B.	1	1	—	1	—	—	—	—	1	2
Dysphagia:										
Painful contraction of crico-pharyngeus	—	—	1	1	—	1	—	—	1	2
Leaking fistula	—	—	—	—	—	—	2	2	2	2
Unsuccessful attempt at œs.	—	—	—	—	1	1	1	1	2	2
Neg. for dysphagia	6	7	—	—	6	6	6	6	18	19
Diaphragmatic hiatal stenosis	1	1	—	—	1	1	1	6	3	8
Simple stricture	1	1	1	1	3	12	3	10	8	24
Carcinoma: High	3	3	4	4	3	3	1	1	11	11
Middle	1	1	7	7	7	12	5	15	20	35
Low	2	2	3	3	4	4	2	5	11	14
Insertion of radium	3	6	7	11	2	2	—	—	12	19
Insertion of Souttar tube	1	1	1	2	2	2	1	2	5	7
Removal of Souttar tube	—	—	—	—	—	—	—	1	—	1
Pressure from without	—	—	1	1	—	—	1	1	2	2
Neg. for primary focus; glands in neck	—	—	—	—	1	1	1	1	2	2
Total œs.	42	46	46	55	44	59	44	71	176	231
Total œs. for F.B.	24	24	21	25	14	14	20	20	79	83
Total œs. for other causes	18	22	25	30	29	45	25	51	97	148

* New cases. Œs. = œsophagoscopy.

As shown in Table V., 231 examinations have been made, 83 in foreign body cases and 148 for other reasons. In 23 patients a foreign body was suspected, but was not found; in a few it may have slipped down in front of the tube. In nine patients an unsuccessful attempt was made at removal; in four of these the object was recovered at a subsequent attempt. The reason for lack of success was: in three cases the use of Mouret's sitting position and the obscuring effect of much frothy saliva; in one intense trauma as the result of previous œsophagoscopy in another hospital; in one slipping of the object after discovery; in one the use of unsuitable forceps; in one transparency and small size of the foreign body; and in one lack of skill in grasping a coin. Seventeen bones were removed; six were fish bones, eight were from meat, and three from poultry (Fig. 4). Disimpaction of an embedded point was in many cases difficult, particularly when attempted upon the sitting patient, in whom the large amount of frothy saliva and mucus, so commonly seen, caused most unpleasant choking. An observation often made may be repeated here—namely, that if a patient is convinced that a bone is stuck in the throat the chances are strongly in favour of the correctness of the statement.

All the foreign body cases—including those in the bronchi—were successful and in none did untoward symptoms occur—that is to say, all the patients went home with the cause of their trouble brought to the surface or with an assurance that no extraneous object was present in the air passages, pharynx, or œsophagus. Coins were frequent, almost always at the level of the crico-pharyngeal fold of young children. As a rule, it may be said that an anæsthetic causes a child a great deal more fear and discomfort than does the removal of the foreign body, which can be effected in a few seconds if the operator and his assistants are well practised. Twenty-one in all were removed. In two instances the coin had been in situ for three months and the extensive granulations made localisation difficult; in neither case was there any subsequent cicatricial stricture (tabulated as "negative œsophagoscopy after F.B."). Only one safety-pin has been encountered and that with the point down, so that no difficulty was met with; the ring was grasped by rotation forceps and the pin was removed with the point trailing. No difficulty was experienced with other foreign bodies.

Of patients complaining of dysphagia not caused by foreign body 18 were found on examination to be without any organic lesion. On two occasions the œsophagoscope could not be passed because of the rigidity of the patient under local anæsthesia; in each case a general anæsthetic allowed an examination to be made.

A young female patient with pain in the crico-pharyngeal fold, relieved by swallowing, was cured by dilatation with a big œsophageal speculum; in view of the great force exerted by the muscle band in its normal state of contraction it is surprising that no more cases have presented themselves. Of cases of arrest of food at the level of the diaphragm one was treated by dilatation with Jackson's bougies and also with Brown Kelly's pattern of hydrostatic bag because of some inflammatory contraction at the diaphragmatic hiatus; these procedures were thought necessary before the routine use of Hurst's mercury bougie.

Of patients with pressure on the œsophagus from some external cause one was suspected of aortic aneurysm associated with carcinoma at the level of the crossing of the left bronchus. An œsophagoscope was passed as far as the aortic bulge and a Hill's tube was slipped through the stricture, with temporary relief.

In the group classed as simple stricture two patients had dysphagia after total laryngectomy and in both there was a rupture of the repaired pharynx in the site of the operation scar, apparently associated with cicatricial stenosis. Of six other cases there were histories of 20, 17, 15, and 13 years', nine months' and three weeks' duration; all were much improved and swallowing of solids was fairly easily re-established; in one or two cases Plummer's thread-guided method was used. Four cases showed strictures close to the crico-pharyngeal fold, while two were near the level of the left bronchus. One patient with apparent carcinoma was proved to be of simple inflammatory type by the examination of a piece of tissue removed with long forceps of Jackson's type.

Forty-six patients with carcinoma have been examined; although a correct diagnosis may often be made without the use of the œsophagoscope, it is in our opinion invariably necessary to make a direct examination. As already noted, one woman with all the clinical and X ray appearances of carcinoma was found by œsophagoscopy to have a simple inflammatory stricture; she was cured. Two other patients had the symptoms, clinical and X ray appearances of non-malignant obstruction at the level of the diaphragm, but both were proved to have carcinomata, as demonstrated in microscopical sections. A correct diagnosis is very necessary, as such forms of treatment as the mercury bougie are definitely contra-indicated in cases of malignant new growth. Of 46 cases, 11 were at or close to the crico-pharyngeal fold, 8 in men and 3 in women; 24 were at or near the middle of the œsophagus, 22 in men and 2 in women, 1 of whom was not definitely proved to have a carcinoma; 11 were at the level of the diaphragm, 9 in men and two in women. Of the total patients 39 were men and 7 were women. The ages of patients were as follows: of

growths at the top, the youngest man was 50, and the youngest woman 58; the eldest man was 84, and the eldest woman 70. Growths at the middle occurred at 48 in the youngest man, and at 63 in the youngest woman; at 77 in the eldest man, and at 73 in the eldest woman. Of growths at the bottom the youngest man was 44, and the youngest woman 46; the eldest man was 77, and the eldest woman 70.

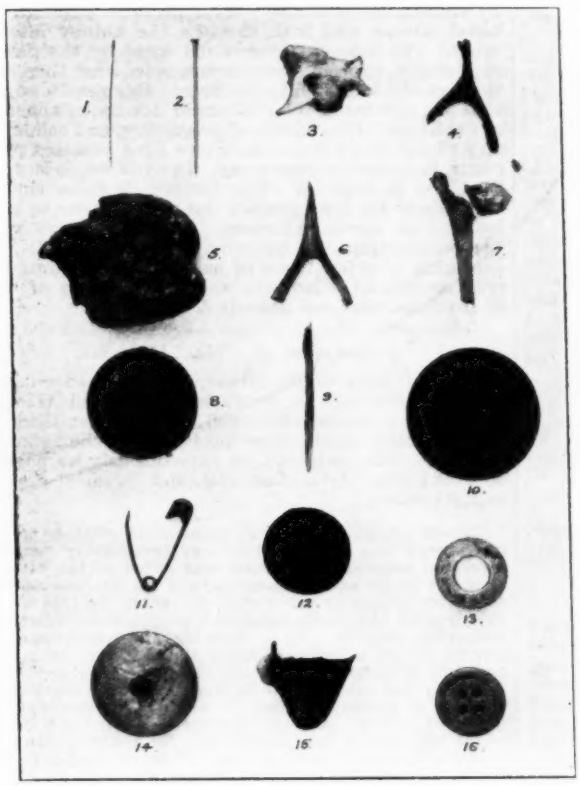
Of those growths at the top of the œsophagus none of the male cases appeared suitable for operation. Of the women two had typical post-cricoid neoplasms; one had total laryngectomy and pharyngectomy, but, owing to the wide extent of the growth with involvement of the thyroid gland, death took place next day. A second patient refused operation and the third appeared unsuitable. For this type of case either lateral pharyngectomy by Trotter's method or pharyngectomy combined with laryngectomy are advocated; failing these procedures the patient is referred for gastrostomy. For carcinomata near the middle of the œsophagus various measures have been employed, all palliative, but some of them enabling the patient to swallow fairly comfortably until he dies of asthenia or of lung complications, without the unpleasant necessity of gastrostomy feeding. Simple dilatation under vision with Jackson bougies has given considerable relief; Plummer's thread-guided method has also been used, but in some cases there has been difficulty in getting the thread to pass. One patient devised the method of piercing a carbolic lozenge and attaching the thread to it; after being swallowed, the lozenge partly dissolved until it was small enough to pass through the stricture. Souttar's tubes have been introduced seven times and often with relief; the difficulty has been to keep them in place. In two patients death took place one and three days respectively after introduction from general asthenia and not from perforation of the œsophageal wall.

Radium has been used on 12 patients, the least number of milligramme-hours being 800 and the most 3700, with figures in others of 2400, 1750, and 1600.

A method recently employed was to apply 100 mg. of metallic radium or a tube of radon in a silver container attached to a whalebone staff; below the container was screwed a large olivary bulbous end, perforated for a thread as in Plummer's method (Fig. 5). The bougie is guided by the thread through the malignant stricture, and is pulled up until its shoulder taps against the lower end of the stricture; the radium is then in correct position in the growth and is retained there for two or three hours. The procedure can be repeated daily without much discomfort. One patient had 22 applications; he died of extension of the growth above the level of the part irradiated, the trachea being involved. Alterations in the applicator have now been made to allow of better distribution of the radium.

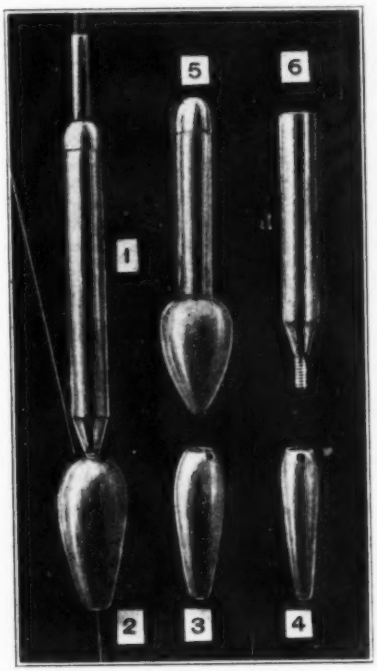
Growths at the lower end of the œsophagus were in one or two instances primary, but some spread up from the stomach; gastrostomy was the routine

FIG. 4.



Foreign bodies removed from larynx, pharynx, and œsophagus: (1) Needle impacted in larynx. (2) Pin from pyriform fossa; (3)–(16) from œsophagus: (3) Zygoma of rabbit. (4) Wishbone of chicken. (5) Beef bone. (6) Fish bone. (7) Clavicle of duck. (8) Halfpenny. (9) Fish bone. (10) Penny (boy aged 1 year 1 month). (11) Safety-pin (girl aged 2 years). (12) Farthing. (13) Metal washer. (14) Metal whistle. (15) Denture. (16) Button. (The penny (10) shows the scale of reduction.)

FIG. 5.



Radium applicator: (1) Radium container with whalebone staff above. (2) Olivary bougie, perforated for thread, attached to container. (3) and (4) Metal bougies for preliminary dilatation. (5) Container drilled out almost to top, to apply radium to lowest part of growth. (6) Extension to fit between (1) and (2) in order to apply radium to highest part of growth.

The natural length of the container (5) is 6 cm.; the other illustrations on the figure are reduced in proportion.

procedure, or jejunostomy if the stomach was extensively invaded. A piece of tissue can be taken without danger in suitable cases in order to establish a definite diagnosis. One patient appeared to have suffered from œsophagectasia, caused by a neurosis of the lower end of the œsophagus. Later he had an inflammatory stricture—no doubt as the result of stagnation of food—as seen with the œsophagoscope. It was only after some months that malignant changes were suspected and were confirmed by microscopy, thus emphasising the necessity of frequent direct inspection.

Conclusions.

All manner of foreign bodies can be retrieved by the route of which they entered—that is to say, by œsophagoscopy.

Simple strictures respond very well to treatment, but direct examination is required.

Even though the diagnosis of carcinoma can generally be made correctly without œsophagoscopic examination, yet mistakes can occur. Therefore direct inspection and a positive diagnosis are always necessary.

Summary.

The number and variety of cases requiring endoscopic treatment in a large general hospital are sufficient to warrant the purchase of an efficient set of instruments and to make constant practice worth while. Attention must be paid to detail, particularly in preparation for the removal of a foreign body. The removal of foreign bodies does not by itself give sufficient practice, either in œsophagoscopy or bronchoscopy; the best road to success is to follow minutely the rules laid down by a master of the subject, such as Dr. Chevalier Jackson.

URINE PROTEINS IN NEPHROSIS, PREGNANCY, AND MYELOMATOSIS.

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SEVERAL explanations of the origin of urinary proteins have been suggested. The idea that proteins of the food are excreted by the kidney, either unchanged or after partial digestion, has been generally abandoned, and it is now accepted that urinary albumin in nephrosis is identical with serum albumin. The interesting results of Hynd (1925) support this view, but he himself admits that he did not purify the proteins satisfactorily. The present author has shown (1927 [1]) that, for determination of the optical rotatory power of proteins, careful purification is necessary, and particularly the removal of lipins under conditions precluding denaturation. When efficient purification with suitable precautions is effected, concordant and characteristic values for the rotatory powers of proteins are obtained. Hynd obtained values ranging from $-49°$ to $-66°$ for the specific rotation of proteins from the urine of patients with chronic nephritis and albuminuria of pregnancy, and values of from $-34°$ to $-41°$ and from $-49°$ to $-59°$ in eclampsia. He concludes that serum albumin (rotation $= -52·9°$) is excreted in nephritis, albuminuria of pregnancy, and some cases of eclampsia, but that in other cases of eclampsia lactalbumin (rotation $= -41·2°$) is excreted in the urine owing to some derangement of milk secretion. No clinical differentiation was made between the two classes of eclampsia, which were apparently identical in symptoms. Owing to the small quantities available, Hynd did not free the proteins from lipoids, which seriously affect the rotation, and they may have been contaminated with nitrogenous substances such as uric acid, which seems to cling tenaciously to protein precipitates and which decreases the apparent rotatory power of the protein by increasing the nitrogen-content of the solution. Further, the solutions examined were very dilute; in general the rotations measured were only about $0·4°$, and in one case only $0·08°$. This, of course, increases the experimental error, perhaps in some cases to nearly 30 per cent. It would also seem possible that lactoglobulin and caseinogen might accompany the milk albumin if the milk secretion were deranged and lactalbumin passed into the blood stream and thence through the kidney. No one has observed this phenomenon.

Thomas, Schlegel, and Andrews (1928) suggest that in albuminuria the first stage is liver damage caused by circulation of toxins; liver proteins pass into the blood stream and leak through the kidney into the urine. The kidney becomes damaged by the passage of foreign protein and serum proteins then leak through the kidney into the urine. Our results suggest that no abnormal liver albumin occurs in the urine of nephrosis, albuminuria of pregnancy, and eclampsia, and the globulin fraction, where liver proteins might occur, is generally very small. In addition, it is shown that the passage of some foreign proteins through the kidney for long periods does not appear to cause leakage of serum albumin. In the present paper the purification and examination of the proteins in the urine of a few cases of nephrosis, albuminuria of pregnancy, and eclampsia, and some details of cases of myelomatosis are described.

Preparation of Urine Albumins.

In some cases dilute urines were first concentrated by ultrafiltration as previously described (Hewitt, 1927 [2]); in others the fresh urines, after filtration through filter paper, were subjected to the following processes, all conducted as expeditiously as possible to avoid proteolytic, bacterial, and chemical changes in the protein.

Instead of adding sufficient ammonium sulphate crystals to saturate the urine—not a very satisfactory process—saturated ammonium sulphate was added to the urine up to about 70 per cent. saturation, and the pH was adjusted to 4·7 by adding 10 per cent. acetic acid. In this way all the albumin was precipitated and there was no difficulty in dissolving crystals. Next morning the precipitate was filtered off on a buchner funnel and dissolved in a small quantity of water, and the solution was neutralised, cooled to 0° C., and added drop by drop to 7–10 volumes of a mixture of absolute alcohol (7 vols.) and ether (3 vols.) cooled to $-15°$ C. After being allowed to stand in a mixture of ice and salt at low temperature for 1–2 hours the precipitated proteins were filtered off on a chilled buchner funnel in the ice chest, washed thoroughly with an alcohol-ether mixture and with ether, both being cooled to $-10°$ C. and then transferred rapidly to a Soxhlet thimble and extracted with ether for two hours, sodium metal being placed in the extraction flask to prevent any extracted alcohol from refluxing. The dried proteins are not denatured by ether. The presence of ammonium sulphate in the protein facilitates and accelerates the filtration. After two hours' extraction the ether and sodium were renewed and the extraction continued for a further 18 hours. The proteins were then transferred to a vacuum desiccator and dried in vacuo over sulphuric acid for 48 hours. After being allowed to remain in contact with the atmosphere for 24 hours the proteins dissolved readily in water, leaving a small amount of insoluble material (uric acid, &c.). The ammonium sulphate concentration was then adjusted to 50 per cent. by addition of saturated ammonium sulphate solution. The precipitation was allowed to continue overnight, and then the precipitated globulins (only a small proportion of the total proteins) were filtered off on a buchner funnel, a hardened filter paper being used. The albumin in the filtrate was precipitated by adding a further quantity of saturated ammonium sulphate solution and adjusting the reaction to pH 4·7. The precipitation was allowed to continue overnight, and then the precipitated albumin was filtered off on a hardened filter paper in a buchner funnel. After two repetitions of this precipitation the albumin was dissolved in about 12 c.cm. of water and placed in a tested collodion sac sealed by means of rubber pressure tubing attached by a rubber band and closed by a piece of glass rod. The proteins were dialysed against distilled water for at least ten days,

* Working under the auspices of the Freedom Research Fund.

the outside fluid being changed constantly the first day and then daily. At the end of this time all the ammonium sulphate had dialysed out. The solution was then filtered through a Seitz filter, a clear, sterile fluid with a yellow or brownish colour being obtained.

Optical Rotatory Powers.

Rotations were determined by means of a Schmidt and Haentsch polarimeter with a tripartite field and a direct vision spectroscopic eyepiece fitted by Hilgers. The light sources employed were a mercury-vapour lamp (λ = 5461—5780 A.U.) and a Nernst lamp with colour filter (λ = 6660 A.). In Tables I. and II. rotations are quoted for a 1 dm. tube, except where otherwise stated.

TABLE I.—*Observed Rotations.*

Case.	Protein concentration (percentage)	αλ		
		λ 6660	λ 5780	λ 5461
1	2·00	−1·00°	−1·33°	−1·54°
2 (*a*)	3·29	−1·62°	−2·28°	2·63°
2 (*b*)	1·74	0·79°	1·17°	1·35°
2 (*c*)	1·26	0·63°	0·90°	1·02°
3	3·99	1·91°	2·75°	3·14°
4	2·89	1·31°	1·96°	2·17°
5	4·87	2·39°	3·38°	3·80°
6	3·78	1·67°	2·60°	2·94°
7	4·50	0·82° *	1·21° *	1·38° *
8	2·60	1·15°	1·67°	0·79° *

(*a*), (*b*), (*c*) = specimens.
* Denotes 4 cm. tube used in place of 1 dm. tube.

TABLE II.—*Specific Rotatory Powers.*

Case.	Diagnosis.	[α]λ		
		λ = 6660	5780	5461 A.U.
1	Nephrosis.	−50·0°	−66·7°	−77·0°
2 (*a*)		49·2°	69·2°	79·9°
2 (*b*)		45·3°	67·1°	77·4°
2 (*c*)		50·0°	71·5°	80·9°
3		47·8°	68·9°	78·6°
4		45·3°	67·8°	75·1°
5	Albuminuria of pregnancy.	49·1°	69·4	78·0°
6		44·2°	68·8°	77·8°
7	Eclampsia.	45·6°	67·3°	76·7°
8		44·2°	64·3°	76·0
Mean value (urine albumin)		−47·1°	−68·1°	−77·7°
Serum albumin (Hewitt, 1927 [1])		−47·3°	−67·0°	−78·1°

It will be seen that the optical rotatory powers of the urinary albumins in nephrosis, albuminuria of pregnancy, and eclampsia were, within the limits of the experimental error, identical with that of serum albumin. The rotatory powers for green light (λ = 5461 A.U.) are those most accurately determined. It is more difficult to match the filtered red light and the yellow line is a doublet.

The refractive indices of urine and serum albumin are not distinguishable (Table III.).

TABLE III.

T° = 17° C.

—	—	Concentration per cent.	nD of soln.	—	Calculated nD of 100 per cent. protein.
Case 7.	Eclampsia.	4·5	1·3422	0·0090	1·583
.. 8.	..	2·6	1·3385	0·00053	1·582
Ser. alb.	Normal.	7·45	1·34835	0·01515	1·586

Mr. Smith, of the London Hospital Medical College, has examined the ultra-violet absorption spectra of some of these preparations and found them indistinguishable from serum proteins. A few notes on the cases follow (Table IV.).

TABLE IV.

Case.	Sex.	Age.	Blood-urea.	Urine urea concentration.	P.S.P. excreted in three hours.	Albumin volume in urine.
			Per cent.			
1	M.	34	0·041	2·16	47	Three-quarters.
2	M.	26	0·050	>2·0	>50	Half.
3	F.	22	0·070	2·0	46	—
4	M.	31	0·138	1·0	Trace.	Half.
5	F.	23	0·040	>2·0	>50	,,
6	F.	27	0·030	>2·0	>50	,,

CASE 7.—Female aged 34. Eclampsia. No previous miscarriage; two children. Dec. 3rd, 1927: eight months pregnant; blood pressure, 200. Unconscious and twitching; urine solid with albumin, one fit. 4th: improved after stomach and colon wash. 5th: normal fœtus born dead. 7th: urine—albumin half volume. Blood-urea, 0·021 per cent. Urine-urea concentration, 3·84 per cent. 11th: blood pressure, 150. 13th: albumin cloud only.

CASE 8.—Female aged 30; eclampsia; one child; no previous miscarriage. Dec. 6th, 1927: 32 weeks pregnant, no albuminuria or vomiting; some hæmorrhage. Blood pressure, 120. Jan. 5th, 1928: further hæmorrhage; vomiting; albumin two-third volume; blood pressure, 220; slight œdema; two fits. Fœtus born in rigor mortis. 9th: slight trace of albumin; blood pressure, 160/115. Urine samples examined were taken just before and after fits.

Myelomatosis.

CASE 1.—Male aged 46. Spontaneous fracture of right tibia. X ray examination showed typical moth-eaten appearance of bones, especially femora, pelvis, and skull. Lost 21 lb. in two years. Examination of the blood on various occasions indicated a severe degree of secondary anæmia, but the differential counts were not significantly abnormal. The serum calcium (12·8 mg. per 100 c.cm.) was slightly high, as might be expected in a case of bone breakdown. The serum proteins were normal in amount: albumin, 4·35 per cent.; pseudoglobulin, 1·31 per cent.; euglobulin, 0·65 per cent.; total, 6·31 per cent. A trace of Bence-Jones protein was, however, detected in the serum. None of the abnormal protein was detected in the cerebro-spinal fluid, which was normal in composition (determined by the method previously described, Hewitt, 1927 [3]): albumin, 0·031 per cent.; globulin, 0·003 per cent.; total, 0·034 per cent. Blood fragility and clotting time were normal. It would be expected, and it was found, that since Bence-Jones protein is excreted by the kidney some must appear in the blood stream. The non-appearance in the cerebro-spinal fluid is also not surprising. Considerable amounts of the protein have been passed continuously into the urine (Table V.).

TABLE V.

Date.	Volume of urine in c.cm.	Protein per cent.	Quantity passed in 24 hours.
19/10/26	700	2·0	14 g.
20/10/26	800	1·5	12 g.
11/11/26	2500	0·64	16 g.
30/11/26	3600	0·68	24·5 g.
8/11/26	2600	0·56	14·6 g.
6/ 1/27	4000	0·64	25·0 g.
8/ 4/27	3250	1·09	35·4 g.

Large quantities still appear continuously in the patient's urine, but from 1926 until the present day no albumin has been detected and, although renal functional tests indicate kidney damage, the damage is not becoming more marked but is rather decreasing (Table VI.).

TABLE VI.

Date.	Blood-urea per cent.	Maximum urea concentration in urine, per cent.	Percentage P.S.P. excreted in three hours.
29/11/26	0·067	0·54	17·5
5/ 4/27	0·054	0·72	27·5
10/ 2/28	0·079	1·68	34·4

Continuous passage of large quantities of a foreign protein does not therefore appear to cause leakage of serum albumin into the urine. The patient is still alive and not confined to bed.

CASE 2.—Female aged 66; eight children alive and healthy. Several spontaneous fractures caused by trivial accidents. X ray appearance showed extensive rarefaction of bones, including femora, humerus, skull, ribs, left shoulder (where a fracture had occurred), eighth dorsal vertebra, and collapse of head of tibia and fibula. Blood examinations indicated a slight degree of anæmia. The serum calcium was normal—i.e., 9·4 mg. per 100 c.cm. Less Bence-Jones protein was found in the urine than in the previous case, but it has always been and is still present continuously (Table VII.).

TABLE VII.

Date.	Urine volume in c.cm.	Protein per cent.	Quantity passed in 24 hours.
10/10/27	300	0·8	2·4 g.
3/28	200	0·7	1·4 g.

On no occasion has albumin been detected in the urine, and renal functional tests indicate little kidney damage if any.

Date.	Blood-urea.	Maximum urea concentration in urine.	P.S.P. excreted in three hours.
20/3/28	0·03 per cent.	1·68 per cent.	55·6 per cent.

The passage of Bence-Jones protein has not caused progressive kidney damage, nor have detectable amounts of albumin appeared in the urine. The patient is confined to bed.

CASE 3.—Male. Typical X ray appearance. Bence-Jones protein excreted continuously in urine for several years; no albumin detected. The patient was able to carry on a practically normal existence.

CASE 4.—Female aged 51. X ray examination showed typical rarefaction of scapulæ, clavicles, ribs, vertebræ, and most other bones. Pain in back and legs for four years. Blood examination showed some degree of anæmia and slight poikilocytosis and anisocytosis, but no nucleated erythrocytes. Considerable amounts of Bence-Jones protein were excreted. The patient was confined to bed and died on discharge from hospital.

CASE 5.—Male aged 59. Pain in back and under sternum. X ray examination revealed slight rarefaction of upper end of the medulla of the right radius, and of the occipital region of the skull, and some expansion of the sternal end of the right ribs. Splenectomy was performed, and the spleen appeared enlarged but not otherwise abnormal. The blood examinations showed lymphatic leukæmia and some anæmia. Serum calcium was within the normal limits: 9·71 mg. per 100 c.cm., and the blood fragility was normal. A considerable amount of Bence-Jones protein appeared continuously in the urine.

A detailed study of the properties of Bence-Jones proteins is being made, and will be reported subsequently. In every case the urine contained protein, which coagulated on heating at an abnormally low temperature, but in Cases 1 and 2 the protein did not redissolve except under very special conditions. The failure of a urine protein to redissolve on boiling the solution does not therefore exclude the possibility of myelomatosis. The proteins possess properties similar to pseudo-globulin, and different proteins appear to be excreted in different cases.

Discussion.

The albumin in the urine of patients with nephrosis, albuminuria of pregnancy, and eclampsia are indistinguishable from serum albumin. In these diseases, therefore, kidney damage occurs and serum albumin leaks through unchanged. The consequent reduction in serum albumin and the lowering of the osmotic pressure of the blood account for the œdema. In the two cases of eclampsia studied no evidence was obtained of the presence of lactalbumin in the urine as found by Hynd (1925). Admittedly the number of cases is very small indeed, but there seems no reason why milk albumin should be excreted in some cases and serum albumin in other cases clinically indistinguishable from them. Also the absence of any appreciable amount of caseinogen and lactoglobulin from the urines studied by Hynd may support this view.

The fact that continuous passage of a protein—i.e., Bence-Jones protein—through the kidney for long periods does not cause progressive kidney damage or leakage of serum proteins is evidence against the view that albuminuria in general begins by damage to the liver and leakage of liver proteins through the kidney, and that this causes kidney damage resulting in leakage of serum proteins.

The origin of Bence-Jones proteins remains obscure, particularly since they appear to have different properties in different cases and are not all dissolved on boiling.

Conclusions.

1. In the few cases studied no difference could be detected between serum albumin and urinary albumin excreted in nephrosis, albuminuria of pregnancy, and eclampsia. In these cases, therefore, serum albumin probably leaks through the kidney unchanged.

2. Passage of large quantities of Bence-Jones proteins through the kidney for long periods does not produce progressive kidney damage, and does not appear to cause leakage of serum albumins. It is probable, therefore, that the passage of foreign proteins through the kidney does not cause leakage of serum albumin.

3. Bence-Jones proteins differ in properties and are not all soluble in boiling solution. The protein appears to be present in the serum but not in the cerebro-spinal fluid. The albumin and globulin content of the blood and cerebro-spinal fluid are not abnormal in myelomatosis.

The author is indebted to Dr. Lewis Smith, Surgeon-Commander F. G. Hitch, R.N., Dr. J. W. McNee, Dr. Janet Vaughan, and the physicians and surgeons of the London Hospital for permission to quote the cases described, and to Dr. J. R. Marrack for his help and interest.

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THE MECHANISM OF THE STOKES-ADAMS SYNDROME.

AS ILLUSTRATED BY THREE CASES.

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DURING the years 1925–1926 three cases exhibiting the Stokes-Adams syndrome were admitted to the Johannesburg General Hospital. The electrocardiographs of these patients throw some light on the mechanism which produces the syndrome.

CASE 1.—A farmer, aged 66, was admitted to the Johannesburg General Hospital under Dr. A. Watt on Sept. 28th, 1925, for "rheumatism." This had crippled him for the preceding ten months, and the enforced inactivity accounted for the absence of cardiac symptoms. His heart was slightly enlarged to the left, but there were no thrills or murmurs. The blood pressure was 160/95, Wassermann negative, and urine normal. The pulse-rate was 40, sometimes irregular, and on this account an electrocardiograph was taken. This showed a varying 2/1 and 3/1 heart-block (see Fig. 1) with left ventricular preponderance. The auricular rate was not regular in this graph. On Oct. 20th the teeth were removed on account of root sepsis. On the 30th complete auriculo-ventricular dissociation was present, with a ventricular rate of 36 per minute. Adrenalin hydrochloride hypodermically made no difference to the amount of block in the tracing. It was noticed that there were progressive changes in the character of the first ventricular complexes, and that left bundle block set in. Apparently an active myocarditis was in progress.

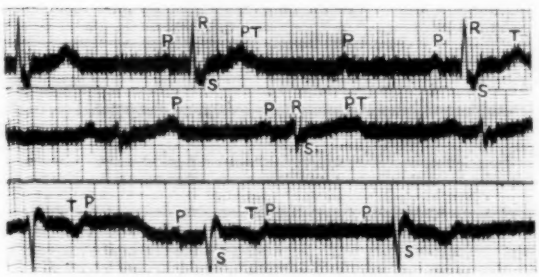
On Nov. 10th the patient had the first of a series of Stokes-Adams attacks, which occurred daily until Dec. 10th. These were typical in form and corresponded to a complete cessation of pulse. Some attacks lasted a few moments, others as long as 42 seconds. At one time there were as many as 20 attacks in one day. Fig. 2 shows complete cessation of ventricular action in lead III. and also exhibits a change in the Q R S complexes in leads I. and II. when compared with Fig. 1. Chart I. is a reproduction of a bromide paper record taken over a long period in the same day. This curve, and a similar one obtained in Case 2, were taken by applying the electrodes to the right arm and left leg of the patient in bed (lead II.). They are read from right to left; the scale is approximately 1 in. to 4 secs. in this case. The first row A D of this record shows a standstill of the ventricles for a period of 15 secs., interrupted only by two dissimilar extrasystoles B and C. This is succeeded in the second row by a period of 2/1 block E F and 1/1 block G H. Both the auricular and ventricular rates vary in these two portions of the curve. The tracing I R is continuous. There is inactivity of the ventricle from I to Z, a period of 34½ secs. The period I J shows regular auricular beats interrupted by fibrillary movements. J X is a fit movement followed by the period X K L where only auricular beats occur. In the period L P there are three fit movements, the first of which lasts 4·5 secs., the second one 3·5 sec., and the third one 7 2/5 secs. These are separated at N and O by auricular beats, each for periods of 2 1/5 secs. At Z 2/1 block again sets in, with the type of Q R S complexes prevailing that day. This tracing shows clearly that the fits occur during periods of ventricular inactivity.

The fibrillary movements from I to J cannot be instrumental in character, as they are not apparent in the ventricular complexes. The auricular rate in the curve varies considerably only at G H. During the days that Stokes-Adams attacks were present (as gauged from cardiographs not published), the auricular rate varied from 72 to 88 per minute. Auricular rate had no influence in determining 2/1 or 3/1 block. The auricular rate at the beginning of the whole series of photographs was 80 per minute, and at the end of the series 66 per minute. Later cardiographs show reappearance of Q R S complexes similar to those present on admission. The last tracing (cardiograph 3) shows 1/1 rhythm, the P/R interval only being lengthened. The last Stokes-Adams attack was on Dec. 10th, about five weeks before discharge from hospital. The blood pressure had fallen from 160/95 to 135/75, the block was 1/1 consistently, and the patient's general health was greatly improved.

Drug Treatment.—Atropine sulphate, gr. 1/150, seemed to be more help than adrenalin hydrochloride, and was given twice a day from Nov. 22nd to Dec. 9th, 1925, and thereafter when necessary. Thyroid and barium chloride were also exhibited.

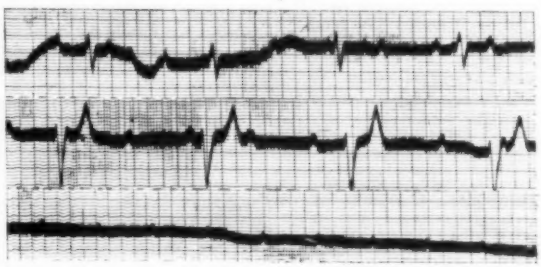
There was, therefore, on admission old myocardial mischief which went through a period of acute exacerbation on both clinical and electrocardiographic evidence. The acute exacerbation cleared up and the cardiac condition improved. The question of its association with oral sepsis arises.

FIG. 1 (Case 1).



2/1 and 3/1 auriculo-ventricular block. (Time 1/5 and 1/25 sec.)

FIG. 2 (Case 1, same day as Chart I.).



Com, lete ventricular standstill, third lead. (Time 1/5 and 1/25 sec.)

CASE 2.—Female, aged 57, had been admitted with cystitis during the year 1920. In 1926, three months before admission into Dr. Watt's ward, she had suffered from shortness of breath. Shortly before admission she herself had noticed irregularity of the heart-beat and had had some attacks of unconsciousness. On August 13th, 1926, while she was attending as an out-patient for her medical condition, her pulse was found to be beating at the rate of 40 to the minute. Electrocardiographic examination showed that 2/1 auriculo-ventricular block was present. Besides the breathlessness there were no other symptoms or signs of cardiac decompensation.

She was admitted to hospital for investigation on Sept. 17th, 1926. There was no obvious enlargement of the heart and no thrills or bruits were detected. There were, however, many dropped beats, and a short sharp sound was heard midway in the ventricular pause and was most marked at the fourth interspace, just to the left of the sternal margin. The duration of the sound was notably less than that of the first heart sound. It was presumed that this was an auricular sound, on account of its position in the cycle and also on account of the presence of 2/1 block according to the electrocardiographic record taken at the time.

On Sept. 25th she had six fits of the Stokes-Adams variety, one lasting two minutes. During the long attack Dr. Watt injected 10 minims of adrenalin hydrochloride into the left ventricle and the patient revived.

On Sept. 26th, 1926, she had three attacks; on the 27th, two; on the 28th, three; and on Oct. 4th she had six attacks, each lasting from 10 to 40 seconds.

FIG. 3 (Case 1).

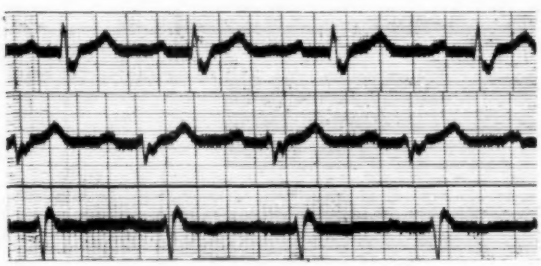
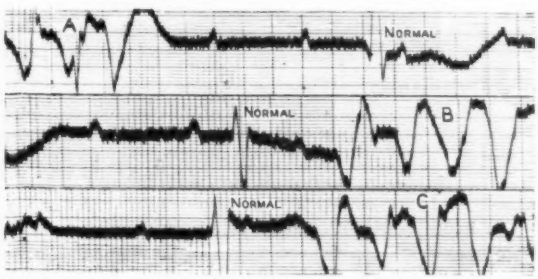


FIG. 4 (Case 3).



Paroxysmal ventricular fibrillation. (Time 1/5 and 1/25 sec.)

During an attack the patient became flushed and then very pale and breathed very heavily. Loss of consciousness with fit movements followed, the pupils became dilated, the conjunctival reflex was lost, and the respiration became slower. The face flushed once more on the first beat.

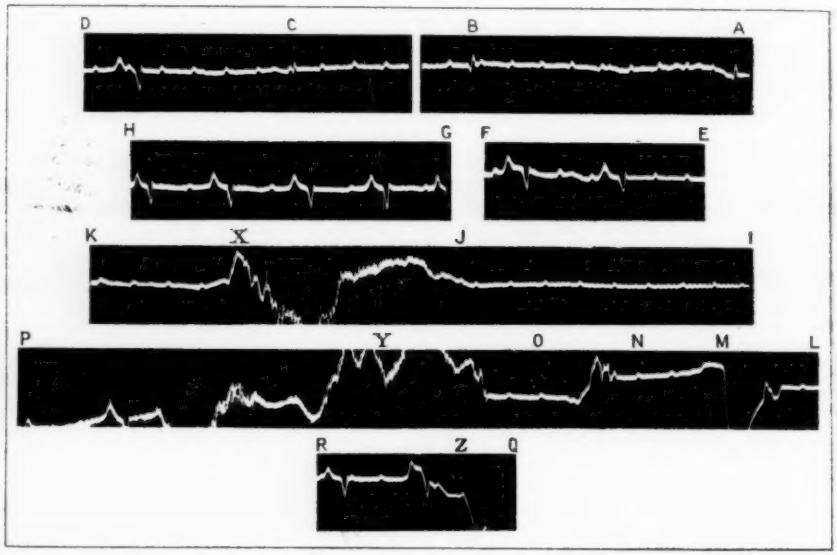
Cardiographs taken during the hospital period showed a progressive change in the Q R S complexes.

Chart II. is a reduced copy of a bromide paper tracing taken on Sept. 28th, ten days before death. The scale is approximately 3 in. to 11 secs. The lead from right arm to left leg was again used (lead II.). Auricular fibrillation is seen at X F and Y, but is not related to the attacks. The fit movement at K L is succeeded by 1/1 block and then by 2/1 block. There is ventricular standstill at Z O P Q (except for two extrasystoles) for a period of 8 1/5 secs. This is followed by a fit movement Q R. Complete block ensues in which the auricular rate is not regular, and this passes into 2/1 block, the dominant rhythm. There is slowing of the ventricle when ventricular standstill has passed away. Ectopic ventricular beats occur at times during the tracing, but they are not related to the attacks, nor do they conform to any Q R S complexes seen in graphs taken previously.

From admission onwards albumin, blood, and pus were found daily in the urine. The infecting organism proved to be a streptococcus which presumably caused the myocarditis. The Wassermann reaction was negative.

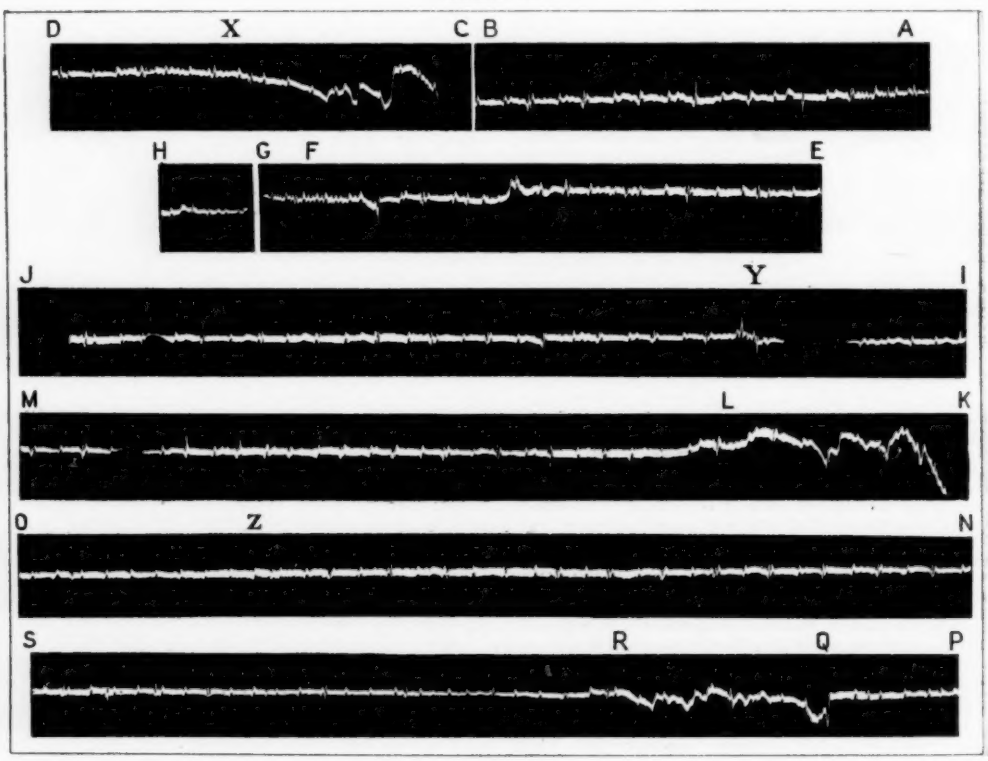
Drug treatment similar to that in the first case was of no avail. She died on Oct. 7th, 1926. No post-mortem examination was allowed.

CHART I.



CASE 3.—Female, aged 46, complained of difficulty in breathing and palpitation for three weeks before admission under Prof. O. K. Williamson. On admission her pulse-rate was 60 and dropped to 30, and finally settled down to a rate between 28 and 30. Her systolic blood pressure was 195 and the heart was greatly enlarged to the left, but there were no valvular murmurs. She had the typical spaces in

CHART II.



the rhythm denoting dropped beats of a partial heart-block. During her stay in hospital she had several attacks of unconsciousness, and the electrocardiograph showed complete auriculo-ventricular block with a right bundle lesion. Later cardiographs show a change of state of the ventricular complexes in lead II., and this is evidence once more of an acute myocarditis.

She was discharged and readmitted after a period of six weeks, as she had had recurrence of the unconscious attacks for a week previously. Her attacks were characterised by breathlessness, cyanosis, and a period of unconsciousness of a few seconds (generally about ten), during which the pulse was imperceptible. She had several attacks during the next few days and died in one of them. No post-mortem was allowed.

Fig. 4 shows three small attacks, A, B, and C. It will be noted that these are totally unlike the graphs of the attacks in Cases 1 and 2. There is no sign of auricular fibrillation or ventricular standstill, but there is a sudden occurrence of ventricular fibrillation, which stops as suddenly as it begins.

Treatment with barium chloride by mouth, and adrenalin hydrochloride solution hypodermically, did not seem to be of any avail.

Analysis of Cardiac Phenomena.

Auricular Effects.—Auricular fibrillation was noted in Cases 1 and 2. This condition of the auricle bears no constant relationship to the incidence of attacks, so that it cannot in itself be the cause of them.

The auricular rate does not constantly vary before an attack and cannot be the precipitating factor. Also, it is the same during an attack as it was just before (Chart I.).

Ventricular Effects.—There is a continuous variation in the shape of the Q R S complexes throughout the series of cardiographs in Cases 1 and 2; there is also some variation in Case 3, when a right bundle block is present ab initio. In all the cases there is electrocardiographic evidence that tracts of inflammatory tissue are occurring in the course of the bundle of His. We suggest that the Stokes-Adams phenomena are dependent in some way on this. In Case 3 the inflammatory lesion has gone so far in the ventricle as to produce paroxysmal ventricular fibrillation.

Woolard [1] has worked out the innervation of the coronary vessels from an anatomical point of view. The physiological researches of Anrep and Segall [2] have demonstrated "the presence of vaso-constrictor fibres to the coronary blood-vessels in the vagi and of vaso-dilator fibres in the sympathetic nerves." Osler [3] comments that "the origin of the condition (Stokes-Adams syndrome) is probably vagal." It is apparent in all the cases that there is no sinus showing before an attack, for the auricular rate does not drop. The syndrome is not produced by vagal effects on the sino-auricular node. So far as we know, the auriculo-ventricular node "follows suit" to the sino-auricular node and is necessarily governed by the same influences. Hence it follows that the ventricular standstill is not due to a direct vagal effect on the auriculo-ventricular node. Assuming that the vaso-dilation of the skin found in Case 2 is evidence of sympathetic inhibition proportionate excess of vagal tone may be inferred. This should produce vaso-constriction of the coronary arteries. I suggest that the effect of vaso-constriction of the coronary arteries on the actively diseased myocardium is to produce ventricular asystole in Cases 1 and 2, and ventricular fibrillation in Case 3.

It is interesting to note that Anrep and Segall [2] note a difference in the properties of the vagal fibres controlling heart-rate and coronary flow respectively. "The vagal fibres controlling the heart-rate and those which regulate the coronary blood-vessels react differently to atropine. A small dose of atropine does not prevent the coronary effect, but it abolishes the effect on rate. A larger dose of atropine cuts out both effects."

Let us examine by considering the therapeutic action of the drugs what support is lent to the supposition that coronary constriction precipitates Stokes-Adams attacks. Atropine sulphate and adrenalin hydrochloride are both used to alleviate the attacks. Adrenalin only of the two has a direct action on the cardiac musculature in clinical doses, but both overcome an excess of vagal tone, atropine by paralysing the vagal ends and adrenalin by stimulating the sympathetic. It is logical to assume that it is just this common mechanism which is brought into play by the use of these drugs. Support is also lent to this idea by Case 1, where atropine was the more effective drug of the two. According to the work of Anrep and Segall, both these drugs should produce dilatation of the coronary arteries by their action on the autonomic nervous system—a conclusion which agrees with the speculation already advanced.

I would therefore put forward, as a hypothesis, that in a certain group of cases exhibiting the Stokes-Adams syndrome the underlying cause is an acute myocarditis and the precipitating cause is a vaso-constriction of the coronary arteries, depending on the action of the autonomic nervous system. The same factors may also be at work in those cases which exhibit occasional attacks over a period of years, if the inflammatory myocardial lesion exhibits acute exacerbations at various intervals. Such a case has not been described here. I have compared the electrocardiographs of these cases with that of Herapath,[4] published in THE LANCET. I cannot ascribe the incidence of the attacks in my cases to the presence of an ectopic irritable point in the ventricle such as Herapath describes.

I wish to thank Prof. O. K. Williamson, Dr. Watt, and Dr. I. Block for their courtesy in allowing me to use their cases and notes, and to Dr. L. R. Shore for his valuable criticism of the text.

References.—1. Woolard, H. H.: Journal of Anatomy, 1926, lx., 345. 2. Anrep, G. V., and Segall, H. N.: The Regulation of the Coronary Circulation, Heart, 1926, xiii., 239. 3. Osler, W.: Principles and Practice of Medicine. 4. Herapath, C. E. K.: THE LANCET, 1926, i., 653.

Clinical and Laboratory Notes.

A NOTE ON THE QUIESCENCE OF IRRADIATED TUMOUR CELLS.

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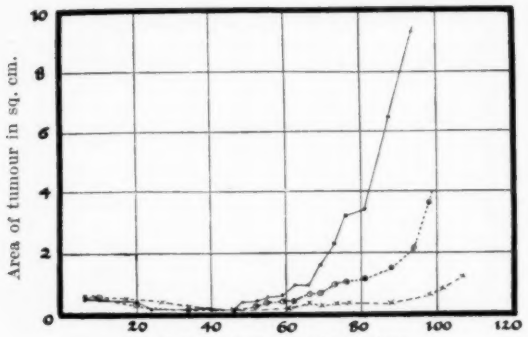
IN 1913 we published[1] the results of some experiments upon the ultimate fate of tumour cells (Jensen's rat sarcoma) after exposure to radium emanation.

When these cells were irradiated outside the body and then inoculated subcutaneously into rats, it was found that, after a "lethal dose," the irradiated cells were able to survive in the body for a period of about eight to ten days, after which very little trace of them could be found. When sub-lethal doses were given, the irradiated tumour cells grew, but at a reduced rate, and the onset of growth was often very much delayed. The extent of this delay in growth, a real quiescent period, may be gauged from the charts of three tumours shown in the figure, which are reproduced from the data given in the paper mentioned.

In the cases illustrated, 0·1 c.cm. of tumour cells was exposed to 0·275 millicuries for 30 minutes before being inoculated. It will be seen that the irradiated cells in one of the tumours showed practically no sign of active growth for something like 80 days, a considerable fraction of the life of a rat.

[1] Proc. Roy. Soc., Series B., 1913, lxxxvi.

Clinically, it must often be impossible to ensure that the cells of a tumour all receive the dose which is considered necessary to ensure a lethal effect, and the question naturally arises whether the cells which receive sublethal doses are likely to go through some similar period of quiescence only to renew their growth eventually. There is little doubt that, in a large proportion of the cases, the normal tissue reactions of the host play the important part of dealing effectively with damaged tumour cells, thus making



recurrences rarer than they would be, if one relied simply upon the direct effect of the rays upon the tumour cells. A striking parallel to this experiment has lately come to our notice, and seems worth recording.

In January of 1921 a woman of 73 was admitted to the wards of the Middlesex Hospital with a tumour in the right breast. This was removed by the late Mr. T. H. Kellock, and sent over to the laboratory under aseptic conditions. The tumour tissue was separated as far as possible from the normal tissues, and was then minced into a sterile petri dish and exposed to a beam of X rays. The dose given to the cells was calculated to be 1·5 times that given to the rat sarcoma cells for a lethal effect. A section of the tumour tissue showed it to be a colloid carcinoma.

After irradiation, 15 c.cm. of tumour tissue in all were inoculated intramuscularly in two abdominal pockets prepared at the time of the operation. The object in view was to try to induce a state of immunity in the patient by the absorption of irradiated tumour cells; the experimental basis of this was described in THE LANCET (1922, i., 212). Six and a half years after this operation was carried out the patient felt some very small nodules on the right side of the abdomen at the site of the inoculation. She said nothing about it till nearly six months later, when the nodules were plainly visible and evidently growing very slowly; nothing could be felt on the left side. There is hardly a doubt that these nodules represent growth of the tumour cells inoculated seven years ago, and which have been in a state of quiescence for all these years. The renewed activity of these cells appeared to coincide with the recurrence of nodules at the site of the original operation on the breast. The patient remains in good general health.

A NOTE ON TRAUMATIC RUPTURE OF THE SPLEEN.

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IN tropical countries rupture of the spleen is fairly common. It will certainly be missed if the possibility of it is not considered in all cases of falls from a height, internal and external violence, and accidents by tram-cars, railway trains, motor-cars, &c. Even when injury is inflicted on parts other than the abdomen the spleen may be ruptured. In one case of fracture of the base of the skull rupture of the spleen was revealed at autopsy. In every case of injury to the skull, especially those due to falls from a great height, a careful examination of the abdomen is imperative. The high incidence of this accident in the tropics is perhaps due to the prevalence of certain tropical fevers of which the most important is malaria. I say "perhaps" because a small, apparently normal spleen with normal consistency has been found ruptured more than once. It may be conjectured that tropical spleens are certainly more vulnerable than those of dwellers in cold countries. I have not been able to show malarial changes in all the nine spleens I have removed in two years of Sir J. J. Hospital surgical practice.

Diagnosis.

Pulse.—This is no guide at all. When a small, quick, running pulse is present there is no question, but a good pulse of normal rate and volume may be consistent with a rupture of the spleen. Twice I have opened up the abdomen when a pulse of normal rate and volume was present and found rupture of the spleen. One should not wait for a "hæmorrhagic" pulse to diagnose rupture of the spleen.

Restlessness.—This is usually, though not invariably, present. In seven cases out of nine it was present to a varying degree. If the patient is admitted during the night and the house surgeon misses the diagnosis, the surgeon next morning on his round invariably obtains a history of restlessness during the night. The cases that have passed a restless night do not live as exploration comes too late.

Thirst.—In all my cases this symptom was constant, and I attach great value to it.

Dullness.—This physical sign is very much overrated. It is present in practically all cases, but its absence should not negative the diagnosis. Twice I have obtained a tympanitic note over the left iliac fossa, due to gas in the bowel and atony of the gut. Increasing and shifting dullness may be a valuable sign for some observers, but I must admit that I have not had much help from it.

Rigidity.—This sign is variable, depending more or less upon the amount of trauma suffered by the parietal peritoneum and not upon the quantity of extravasated blood present in its cavity. In most of my cases it was absent. In fact if rigidity is present I am sceptical of the diagnosis of splenic rupture. In one case of contusion of the abdominal wall where rigidity was very well marked I waited, and was not sorry for it.

Pain and Tenderness.—To me this is the most important and most infallible sign. It is surprising that so little stress has been laid on this point in surgical text-books. In almost all cases I have asked the patients: "*Kya hei ?*" (What is the matter with you ?) and they have uniformly answered "*Idhar hei*" (here it is). There is a definite tender spot about the left hypochondriac region. I have been much helped by this statement, and I always depend on it. Before operation I confirmed the diagnosis by putting a wide-mouthed needle into the peritoneal cavity. I have always found blood, although sometimes only after three punctures. I consider this procedure absolutely safe and surgical, considering the gravity of the situation.

The Technique of the Operation.

The abdomen is opened by a long left paramedian incision under light ether and local anæsthesia. The blood is mopped up with sponges and collected in a sterile bowl containing saline. Blood effused from a ruptured spleen, like extensive hæmothorax fluid, does not coagulate. Slight coagula may be found at the site of rupture, but the blood obtained from the pelvic cavity is all fluid. This blood is injected straight into the vein of the patient after it has been mixed with warm saline. The spleen is rotated on its axis medially and thus the hilum is brought nearer the surface of the wound, and the structures contained in the lienorenal ligament are ligatured in sections. The gastrosplenic ligament is easily separated, and a certain amount of traction has to be used in bringing the upper pole of the spleen into the wound. In the majority of cases removal is easy. Suturing the rent in the spleen is extremely difficult and risky, and should not be attempted, as it entails further hæmorrhage. Sometimes the two halves of the spleen come away separately. The commonest site of rupture is at the anterior border close to the hilum. In one case a vertical tear was found and three cases presented laceration of the lower pole below the hilum. I do not think it is possible to stop bleeding by suturing these areas, which are so friable that sutures will not hold. To my mind excision is the best treatment of an injured spleen which has caused severe bleeding, no matter how insignificant the injury.

The liver, stomach, and intestines should be carefully examined before the abdomen is closed. In one case a rent in the liver was missed and the abdomen had to be opened up again. Ligatures are left long and used as tractors, so that if there is oozing from the hilum fresh bleeding points can be easily secured. They are cut short as a last step before the abdomen is closed.

Rupture of the spleen associated with dilatation of the stomach is a very grave accident and usually fatal. The force that ruptures the spleen paralyses the stomach without any bruise or hæmorrhage on its walls. In one such case where the stomach ballooned out the patient died within 48 hours of the operation. Bruising of the gastro-splenic omentum is not so dangerous as dilatation of the stomach. In one patient I successfully ligated the bruised portion of the omentum in sections. The possibility of including the tail of the pancreas in the hilum is very much exaggerated as the fixation of the pancreas to the posterior abdominal parietes prevents it. As a rule one does not see the pancreas when the spleen is completely brought out into the wound.

Results and Conclusions.

The results on the whole have been very encouraging, but early diagnosis would certainly improve them. Five out of my nine cases recovered, the causes of death in the other four cases being dilatation of stomach, fracture of the base of the skull, delay before operation (the patient had a restless night as the house surgeon did not recognise the situation), and injury to the liver, which was not noticed.

A CASE OF ACTINOMYCOSIS OF THE APPENDIX.

BY FRANCES M. G. SINCLAIR, M.B. ABERD.

With a Note on Laboratory Findings by
S. C. DYKE, D.M. OXF., M.R.C.P. LOND.

ACTINOMYCOSIS of the appendix is comparatively rare, and recovery from it is even rarer. The following case is therefore of interest.

The patient, a single woman aged 65, was seen on the morning of July 18th, 1927, when she showed all the signs of acute appendicitis. She had had some pain the day before, but had been well enough to attend church in the evening. At operation on the afternoon of the 18th a perforated appendix, well shut off by omentum, was found; this was removed and the wound closed with one tube for drainage.

The patient did well for two weeks, when the temperature rose a little and the left leg became œdematous and slightly painful. The pyrexia continued and two days later a swelling could be felt in Douglas's pouch. She was seen by Mr. B. T. Rose, who opened the abdomen in the mid-line and evacuated a large pelvic abscess; the wound was partially closed, a large pack left in to control hæmorrhage, and a drainage-tube inserted. In the course of the next few days most of the wound broke down, leaving the intestines exposed and pus poured out in increasing volume. Ten days afterwards the liver became enlarged and tender, jaundice developed, and the fæces became clay-coloured; two days later there was a rigor with a temperature of 104° F.

On the 20th the patient was seen by Dr. S. C. Dyke, consulting pathologist to the Walsall General Hospital, who took blood for cultural and other examinations and specimens of the pus. Dr. Dyke reported that smears of the pus showed a streptothrix of the actinomycotic type, and advised treatment by large doses of potassium iodide and a vaccine. The administration of potassium iodide was at once commenced in doses of grs. 20 three times daily, and a stock vaccine of the actinomycotic streptothrix was obtained from Messrs. Parke, Davis and Co.

For the following five weeks the patient ran a high swinging temperature with occasional rigors and pus continued to pour from the wound. The dose of potassium iodide was gradually raised until by the middle of September the patient was taking grs. 35 three times daily. About this time the wound commenced to close in, and by the second week in October had healed sufficiently for the patient to be removed from the nursing home to her own house. At this stage there was a long sinus running down into the left side of the pelvis from which pus was still discharging profusely; the original appendicectomy wound had by this time healed completely. The liver remained enlarged and tender, but the jaundice had disappeared; the œdema had subsided in the left leg, but had reappeared in the right; the mental condition had deteriorated and the patient was depressed, suffered from failure of memory, and from time to time from delusions.

The wound continued to close, and the discharge to become less; the temperature settled, but the patient developed intermittent attacks of pain in the right hypochondrium with dullness and tubular breathing at the right base accompanied by some dry cough. She became more and more listless and apathetic, took no interest in anyone or anything, and completely lost her memory for recent events. Early in November it was decided on account of the mental state to discontinue the potassium iodide, and at the request of the relatives the vaccine was also dropped. The mental condition at once began to improve, and by the end of the month she had regained sufficient interest in life to start reading the newspaper again; the improvement was maintained, and by January the patient was able to get out of bed. By March the general condition was good, but the patient still had a discharging sinus requiring dressing at least twice daily. Another short course of the vaccine was given, and the potassium iodide was restarted in doses of grs. 10 three times daily, but the patient refused to go on taking the drug as it made her so depressed.

The healing of the sinus continued, and it now discharges only an occasional bead of pus. The abdomen now presents no abnormalities other than some herniation through the scar of the second operation, which is controlled by a belt; the lungs are clear and the patient is leading the same sort of life as before the operation.

Note on Laboratory Findings by Dr. DYKE.

Blood culture taken on July 20th gave no growth after 72 hours' incubation. The blood gave a negative direct van den Bergh reaction, and a slight positive indirect. Urine showed no bile salts, pigment, or urobilin. Films of the pus from the second operation wound showed numerous coliform bacilli and a few streptothricial threads. On the strength of this finding a larger supply of pus was asked for, and several cubic centimetres were forwarded by Dr. Sinclair on the following day. This pus showed numerous filaments and some dense clumps of streptothrix. The threads were Gram-positive, but failed to take the fuchsin when stained by the Ziehl-Neelsen method. Cultures were made on ordinary nutrient agar, on glucose and glycerine agar, and into plain and glucose broth, and were incubated both aerobically and anaerobically; but no growth of the streptothrix could be obtained. Pus was inoculated subcutaneously into the back of one mouse and intraperitoneally into a second one; both animals survived until killed six weeks later, when neither showed any sign of disease.

Walsall.

THE WOLVERHAMPTON HOSPITALS.—The Counsellors of State, on behalf of the King, have given authority to the Wolverhampton amalgamated hospitals to be called "The Royal Hospital." The institutions recently amalgamated are the Wolverhampton and Staffordshire Hospital, the Wolverhampton and District Hospital for Women, and the District Nursing Association and Maternity Home.

EDINBURGH ROYAL INFIRMARY.—The annual report of this institution shows that during the financial year 18,779 patients were admitted, which with 901 patients in the infirmary at its opening makes a total of 19,680 treated—an increase of 967 over the previous year. Of the cases admitted Edinburgh furnished 8815 and the country 9964. Out-patients to the number of 62,085 (most of whom attended several times) received medical and surgical aid. At the Convalescent House the total number of patients admitted was 1612. The report states that on August 6th the institution will have completed 200 years of beneficent work.

At a recent meeting of the managers the retirement of Dr. William Fordyce from the charge of a gynæcological ward was intimated. The managers, in recognition of his valuable work in the infirmary, unanimously invited his acceptance of the position of consulting gynæcologist. Dr. Fordyce has acted as a member of the honorary staff for 22 years. He was appointed assistant gynæcologist in 1906 and gynæcologist in 1921. Warm appreciation of his loyal services to the institution was recorded.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A PATHOLOGICAL meeting of this Section was held on Jan. 2nd, Prof. GEORGE GASK presiding.

Sir LENTHAL CHEATLE gave a demonstration of transillumination as an aid to the diagnosis of breast diseases, a method which he was first made aware of by having it demonstrated to him by Dr. Max Cutler, in New York. (See THE LANCET, 1928, i., 38.) The method was very simple, and he regarded it as of distinct value.

Sir LENTHAL CHEATLE also made a communication on

Sterilisation of Surgical Drums.

He criticised the drum most commonly in use at the large hospitals, stigmatising it as one of the most septic things imaginable. He did not think any bacteriologist would trust a result which was founded on such so-called sterilisation as was applied in a typical drum shown on the screen. Steam, he said, was used under a pressure of two atmospheres, and certainly sterilisation of everything in it was attained; but air also had to be admitted, and, though cotton-wool was used, the portals of entry for the air were so large, and the passage of steam took place at such a great pace, that sterilisation in the end was not by any means complete. Any dressings exposed to this process, however thoroughly sterilised at first, were rendered septic again by the passage of air and its contents. He understood that the makers had never thought of testing the efficacy of the machine bacteriologically. His purpose in making the communication was to warn surgeons as to the possible fallacy of claims made for drums. Sometimes the drums were put into the sterilising apparatus open, sometimes closed, but even when closed the air openings were not closed; and air entering the machine for drying purposes was the vehicle for reinfection. The holes, moreover, were large enough to admit humming birds, humble bees, and grasshoppers; even maggots had been discovered in drums. The speaker had been experimenting with the object of evolving a more efficient sterilising drum, and his final result, which he demonstrated, was a tin having two grooves. Cotton-wool put in the two grooves and the lid on top kept the contents sterile until they were required for use. The difficulty was how to get steam into the drum to carry out the sterilisation; this difficulty was obviated by evacuating the steam and the air three times during the process, the sterilisation occupying two hours. When this method was employed efficiently the dressings, aprons, masks came out sterile and dry. With the apparatus now in general use he did not think the results were any better than after the ordinary wash.

The CHAIRMAN said the communication caused him to feel a little disturbed, because when, as a student, he was attending the bacteriology class, one of the duties was to examine the drums with the big holes, as described, and students were taught to believe that what came out of them was sterile.

Mr. DUNCAN FITZWILLIAMS said that if one bought from a store a roll of ordinary gauze, and removed the first three layers, the remainder of the roll would be found to have come from the manufacturer sterile. He referred to a war experience in Roumania in the matter of improvisation, and spoke of Dr. Cathcart's use of sterile sawdust as a cheap dressing, the centre pith of the wood being torn out and dropped into a pit, always being found strictly sterile.

Mr. FITZWILLIAMS showed a series of patients on whom he had carried out, at various dates,

Partial Removal of Breast for Early Carcinoma.

He said that probably the breast was the only site in the body in which a truly radical operation was carried out—i.e., in which the growth, the lymph field, and the whole area surrounding it. In cancer of the tongue the operator was not nearly so radical, being content with removing a portion of the tongue and the neck glands. In the rectum, too, though this was a danger area, the operation usually done was less sweeping than that in the breast. For breast carcinoma Halstead had recommended that the glands above the clavicle should be removed, because they were in the lymph field. Many surgeons, however, now left them untouched. The speaker suggested to his colleagues that in early cases of breast carcinoma much more could safely be left behind than was usual. The earliest case on which he had operated in this partial way was seen by him 23 years ago, and the patient was still alive; he had had 20 cases with a survival of one and a half to two years so far; while that evening he showed patients who were operated upon five, three, and two years ago. The theory on which he worked was as follows. Cancer was recognised to be, when it started, a local disease—when it was the size of a millet seed. At that stage, he contended, it was successfully removable by a purely local operation; it was so small that it was related to only the finest radicals and lymphatics. If left longer it ate into larger lymphatics, and so glands in the neighbourhood were involved. The difficulty lay in knowing just when it was so strictly local. His own working definition of "early carcinoma" was carcinoma without a single distinguishing malignant attribute. Years ago the teachers at Johns Hopkins school said that the presence of one malignant characteristic in diseases of the breast reduced the surgeon's chance of success by 25 per cent.; while if there were two malignant characteristics the chance was reduced by a further 25 per cent. That Mr. Fitzwilliams held to be true. When a tiny nodule of the breast was discovered the examiner had no right to tell the woman it was "nothing"; it ought to be removed forthwith. He remembered one case in which he could not satisfy himself that there was a lump; but in six months the woman came back with a flaring carcinoma. In a very early case sections would show several doubtful slides, and only one which could be called carcinomatous. He contended that a very early case of carcinoma of the breast could be cured by merely doing this partial operation. He was sure many cancer cells were destroyed by natural processes. The first gland to be infected would be blocked, and so very little or no lymph would pass through; hence this gland, at this stage, would not infect other glands. Until one knew a gland was infected there was no reason why it should be removed. In 30 cases he had seen no reason to regret having done only the partial operation.

When, at a distinctly later stage, infected lymph was flowing elsewhere and nodules were present at different sites, however radical the operation, it would be of little avail. In the smaller operation one did not find secondary growths all round the wound, as in the case of the larger surgical procedures.

The CHAIRMAN said a partial operation of such limited extent was contrary to surgical teaching, though it was probably supported by a partial truth. It was, however, preached by his chiefs a long time ago. His own immediate chief sometimes did only a small operation on the breast, occasionally taking away glands also, but sometimes not. And other surgeons, whose opinions he valued, had also done the small operation and shown good results. His, the speaker's, own trouble was in knowing when there was present only a small local growth. In some of the cases of carcinoma of the breast which he had regarded as very early, he found metastatic growths occurring quickly afterwards. If a growth could be caught before dissemination and destroyed by means of the cautery, or radium, or other method, a cure would probably ensue. But how was one to know

that a case had only reached that stage? Mr. Fitzwilliams instanced in comparison tongue cancer, but in that organ the results were bad.

Sir LENTHAL CHEATLE said he agreed that if a case were met with early enough, local excision would probably suffice. But there must be malignant disease in the terminal ducts and acini before any of the cells got out. His own view was that to adopt the method of local removal was a retrograde step. He remembered several cases in his career, and in the career of other surgeons, in which the axillary glands were enormous and yet it was very difficult to detect even a small primary nodule in the breast. In a series of cases he examined the vessels and tissues round the axillary vein before doing the complete operation, and in only one was that area free from carcinoma.

Dr. D. F. CAPELL asked whether, as it was often impossible to find changes in the breast apart from the local area, there was not a risk of further development of carcinoma from some of these other foci. He had examined a series of such cases and had found changes bordering on cancer in multiple foci. When only a small part of the breast was removed, was not one leaving behind an area which might later become malignant?

Mr. FITZWILLIAMS, in reply, said the points raised concerned a wider area than he had opened up. The idea of merely local removal was not new. The crux of the matter was, if it was felt that removal of half or three-fourths of the tongue sufficed for cancer of that body, why should not a like local removal be enough in very early breast carcinoma? In the early cases he was speaking of there were no enlarged glands in the axilla, nor was there a single malignant characteristic present. If there were such signs a larger operation must, of course, be done. In precancerous leucoplakia of the tongue it was not the practice to remove the tongue.

Prof. C. A. PANNETT submitted a communication on

The Use of the Cautery in Operations on the Stomach.

He explained that he was not referring to the cauterising of ulcers. The problem was the following. Often a patient with gastric disease was thin, emaciated, half-starved, and so was not in a fit condition to undergo a severe abdominal operation. Hence the conservation of every possible drop of blood became a prime consideration. The generally employed methods of performing gastrectomy did not always meet the situation in this respect. It was easy to tie off the lesser omentum and the greater omentum and to proceed, bloodlessly, to a stage at which the actual growth or ulcerous area must be excised. But in the case of a large gastrectomy for high gastric ulcer or carcinoma he had frequently found it impossible to use the ordinary hæmostatic clamps to control hæmorrhages while cutting the viscus across. He had been using a simple procedure for working without hæmostatic clamps. In some clinics, faced with the same situation, the Paquelin cautery had been used, but this was a clumsy method of dividing the stump, and it burned a wide area of the viscus and led to a wide cicatricial band. He had never seen anybody divide viscera with the ordinary Paquelin cautery. When using the cautery for dividing the stomach, two things were necessary. First, one must minimise the amount of heat required, which was done by temporarily controlling the circulation, which would otherwise act as a cooling stream. Secondly, the clamp used must be massive enough to conduct away the heat, so that the tissue around the clamp was not burned. He used two forceps, one of them fenestrated. He described the details of his procedure by means of illustrations on the epidiascope. The adoption of this procedure, he said, had enabled him to operate on people on whom he would not otherwise have ventured. One patient so dealt with died subsequently from a pulmonary trouble and there was found to be no difference in the operation site as compared with the ordinary hæmostatic cautery suture.

Specimens and Cases.

Mr. C. P. G. WAKELEY showed two specimens. The first was one of cavernous angioma of the brain, from a woman aged 25 who came to hospital because of the weakness of the left arm and left leg. Beyond some excitement, nothing pointed to a cerebral lesion. Post mortem, œdema was seen round the angioma in the brain, and it had led to secondary hydrocephalus. The other case was a meningeal myxoma. The man, aged 48, had had fits and some paralysis of the leg. X rays were of great help in locating the tumour. An osteoplastic flap was turned down, and as soon as the dura mater was exposed the growth bulged into the wound, and on incising the dura the tumour spontaneously presented. Shortly after the operation some paralysis of the leg occurred, but that soon cleared up, and the patient got quite well.

Prof. PANNETT praised the surgery carried out in this case.

Mr. GWYNNE WILLIAMS showed a patient on whom he had carried out partial exclusion of the thoracic aorta for the cure of pain. The man had had aneurysm of the abdominal aorta five years, and came to him for the relief of his pain. Mr. Williams reduced the pulse in the femoral in the groin by pressure, and pain had now practically ceased. He could not put a wire in as the aneurysm was too extensive.

Other cases were also shown.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

A MEETING of this Section was held on Jan. 8th with Dr. H. H. DALE in the chair. An informal discussion on the treatment of

ESTABLISHED DIABETIC COMA

was opened by Prof. E. C. DODDS, who pointed out that the subject allotted limited the discussion to methods of bringing a comatose patient back to consciousness. At the Middlesex Hospital they relied for the insulin dosage on blood-sugar estimations. The blood-sugar estimation took about 15 minutes and then the first dose of insulin was given, usually about 100 units; thereafter the blood-sugar was watched and the dosage adjusted accordingly until the patient recovered. It was possible to work with urine-sugar estimations up to a certain point—about the time when the patient began to lose his air-hunger—but thereafter grave risk was run if blood-sugar estimations were not made. He disagreed with those who regarded it as waste of time to administer glucose: apart from the benefit to metabolism, glucose acted as a barrier against hypoglycæmia. The alkali reserve was worth determining, for it revealed more than did the blood-sugar estimation or the simple tests for acetone bodies in the urine. The majority of patients treated in this way recovered, but a certain number died. For these deaths three reasons had been put forward: (1) Inability to control the diabetes so that hyperglycæmia and ketosis continued. This occurred chiefly in septic cases and therefore did not come into the present discussion. (2) Kidney damage, leading to retention of urea and a uræmic coma very like diabetic coma. Investigation of a series of cases had shown, however, that high urea and non-protein nitrogen content in the blood was not unusual in diabetic patients, and that it occurred in those who recovered from coma as much as in those who died. (3) Failure of the circulatory system. Two patients at the Middlesex who had died in coma had had low blood pressure and had appeared to die of circulatory failure. The total acetone bodies in their bloods had been below normal, about 3·5 mg. per 100 c.cm.; in one case the blood had been taken just as the patient died. The blood pressure was of great prognostic importance. In these two cases the subcutaneous administration of ephetonin and pituitrin had failed to save the patients' lives.

An Instructive Case.

Dr. GEORGE GRAHAM said that all his patients had either recovered or had first been treated very late. Four weeks ago, however, he had had a case which might be instructive.

The patient was a boy of 16 who had been doing well on diet and insulin for six years and had entered for an examination. He had felt ill and done his papers badly, and had gone to bed without either food or insulin. At 12.30 A.M. he had vomited. At 3.30 A.M., when his mother had seen him, he had been obviously ill, and she had supposed him to be suffering from hypoglycæmia and had given him adrenalin and sugar. When the doctor had seen him at 6.30 A.M. he had been dazed and had complained of pain in the right side of the abdomen, for which morphia had been given. He had then had more sugar and travelled 30 miles to hospital by car. On arrival he had been very cold with a pulse-rate of 120, a blood-sugar of over 700 mg., and a white blood cell count of 32,000; 100 units of insulin had then been given. The possibility of a gangrenous appendix had led to a laparotomy—the first error in treatment, for nothing abnormal had been found. At 4 P.M. the blood-sugar had again been over 700 mg. and 50 g. of dextrose and 150 units of insulin had been given. He had smelt strongly of acetone, and the blood had flowed sluggishly when withdrawn for testing. He had therefore been ordered saline infused by gravity, the dextrose and insulin doses being continued. At 10 A.M. the next morning a blood count had shown 5,800,000 red cells, 6000 white cells, and a hæmoglobin percentage of 108. The blood-sugar had dropped to 240 mg. At 11.30 he had received another 100 units of insulin by mistake, and the next 24 hours had been occupied in keeping him out of hypoglycæmia by the administration of sugar per rectum and per os. At 11 P.M. the blood-sugar had risen to 170 mg. but at 3 A.M. the patient had become pale and rigid, being restored to normal by the administration of adrenalin and dextrose. At 8 o'clock next morning the blood-sugar had been 40 mg. and adrenalin had been repeated, followed by 10 units of pituitrin and dextrose intravenously. Next morning he had been better, with a blood-sugar of 370 mg.

The urine of this patient had contained granular casts and pus cells but no red cells, and not until the sixth day had acetone bodies appeared in it; then the reaction had been very strong until, on the fourteenth day, there had again been no acetone in the urine. The boy had gone into coma because he had had something wrong with his kidneys and they had been unable to excrete acetone bodies. Treatment of diabetic coma must be by the administration of plenty of insulin and plenty of sugar; it was a mistake to give insulin without waiting for the blood-sugar estimation. Further, fluid should be given intravenously; one patient who had died of circulatory failure had had a hæmoglobin percentage of 140 per cent. These patients died from a condition akin to surgical shock; they could not keep fluid in their blood. Therefore fluid must be given them, if necessary under pressure. There was often some vein spasm which prevented the entrance of fluid under gravity.

The Administration of Glucose and Alkalis.

Dr. R. D. LAWRENCE said that he had not had many cases of diabetic coma, as the pre-comatose patient usually recovered with insulin and glucose. He agreed that the patient was dehydrated, as judged by the tension of the eye, and should at once receive large quantities of intravenous saline. With this, where the pulse was collapsed, should be given a drop or two of adrenalin. Difficulty in getting the fluid in could be overcome by the use of a blood transfusion syringe. Strophanthin might be given for the heart, but the effect of adrenalin alone was often miraculous. It lasted for 20 to 40 minutes. The whole problem was one of circulatory depression, and the failure of the kidney to excrete acetone bodies had nothing to do with the severe condition of the patient. He did not agree, however, that glucose should always be given: its administration was unnecessary and unphysiological. When the blood-sugar could be watched sugar should not be given at the outset, but for the patient outside hospital it was essential from the first, as it was impossible to tell how quickly a patient would respond to the insulin. Improvement usually coincided with lowering of the blood-sugar, but the patient might just as well recover with a high blood-sugar. The old overdosage with alkalis was now discarded, but it was wise to give small doses of sodium bicarbonate in the early stages. He detailed a case illustrating the very prolonged effect insulin might have once it got going. In this patient it had required large doses of insulin to get the blood-sugar down in the first 12 hours, and it would never have come down if glucose had been given as well.

Prof. HUGH MACLEAN said that everybody was agreed on the general treatment of these cases and that large doses of insulin should be given. At his hospital it was the custom to give 50 units before the blood estimation and thereafter to regulate the dose by the blood-sugar. He agreed that when the blood-sugar could be watched it was unnecessary and unphysiological to give large amounts of glucose. There was no doubt of the efficacy of cardiac stimulation, and camphor might have a marked effect in some cases. It must be remembered that a high blood-sugar in itself did no harm so long as there was no acidosis, and that it did not really matter whether the blood-sugar were lowered or not. The principles of treatment must be directed towards supplying large amounts of insulin and moderate amounts of blood-sugar. It was possible for a patient to be suffering simultaneously from diabetic coma and insulin hypoglycæmia, and a fall in blood-sugar did not necessarily indicate the passing of coma. A patient with a blood-sugar of 0·01 or 0·02 might pass huge quantities of ketone bodies in his urine and be in coma. For the general practitioner who could not obtain blood-sugar estimations the problem might be a very difficult one, and under these circumstances plenty of glucose should be given, after the initial dose of insulin. The effect of diabetic coma on the circulatory system was very severe, and grave additional risks were run if the blood-sugar were allowed to get so low that insulin hypoglycæmia might supervene, for this in itself was very detrimental to the cardiac mechanism. In angina patients the brief periods of hypoglycæmia following administration of insulin might precipitate an anginoid attack and cause death. It was bad to give large amounts of bicarbonate; it had been shown that the administration of sugar after a period of fasting would fail to stop the ketonuria if a dose of bicarbonate were given previously. Small doses, however, were indicated because of the low alkali reserve and the depletion of the alkalis of the body.

Dr. O. F. LEYTON said that he had not been convinced that sugar was harmful. Sugar could not dehydrate the patient if plenty of water were given with it. In his experience patients with a low renal threshold might develop diabetes mellitus, and even if this were not admitted, the renal threshold was not constant and might fall very low indeed in diabetic coma and hypoglycæmia. It was therefore dangerous to conclude that because there was sugar in the urine more insulin might be given.

The Time Factor and the Age Factor.

Dr. P. J. CAMMIDGE said that error was bound to occur if it were assumed that all diabetic coma was one and the same thing. The treatment depended greatly on the time that coma had existed and on the age of the patient. Diabetic coma had first been ascribed to acidosis, then to changes in the hydrogen-ion concentration of the blood, and now it was believed to be due to changes in the osmotic pressure in the cells and between the cells and the plasma: depletion of the fixed bases from the nerve cells led to unconsciousness, and from the heart to weakness, fall of blood pressure, &c. In the early stages patients would recover rapidly if the acetone and other bodies which were combined with the fixed bases could be removed. Fairly large doses of insulin intravenously were all that would be required. Other patients, who had been unconscious for some time, would not be affected by any amount of insulin. The patient who recovered easily was usually young. The elderly

patient as a rule needed sugar as well as insulin, and even then the rate of oxidation of the ketone bodies could not always be speeded up beyond a certain limit. The only way then was to give alkalies intravenously in small amounts, along with the insulin and glucose.

Dr. W. W. PAYNE emphasised the fallacy of testing the urine alone. He quoted a case where the urine had shown no sugar or acetone bodies and the blood-sugar had been 0·5, but the patient had died in uræmic coma with a blood-urea of 250 mg. Another patient had been in coma for two days; on the first day he had had acetone bodies in the urine but they had been absent on the second day, although there was no lack of them in the system.

The Significance of Chlorides and Phosphates.

Dr. C. G. WOLF mentioned the work of Prof. L. Blum and his colleagues at Strassburg on the depletion of chlorides in the body in diabetic coma. They thought that part of this condition was due to the very low chloride content of the body. The addition of sodium chloride to the insulin seemed to have a good effect, one that was not produced by any other sodium salt.

Dr. PHILIP HAMILL pointed out that it was dangerous to give repeated doses of morphia subcutaneously for cholera because the drug might remain in the skin while the circulation was poor and be taken up again when the administration of saline had improved the state of the blood. He suggested that the same fate might befall subcutaneous insulin when the patient was dehydrated.

Dr. F. B. BYROM referred to his work on the phosphate-content of the blood. In three fatal cases of diabetic coma he had found the phosphate-content extremely high, a condition only found in uræmia. This suggested that renal drainage played a large part in patients with diabetic coma who arrived late at hospital.

Dr. G. C. LINDER described a patient with diabetic coma who had come into hospital with 400 mg. of blood-sugar and a carbon dioxide concentration of 8 volumes per cent. in the whole blood. He had been given 10 g. of bicarbonate intravenously, which had only raised the carbon dioxide to 17 volumes per cent., although the hyperpnœa had disappeared and the patient improved. Another 15 g. of bicarbonate had brought the carbon dioxide content to 39 volumes per cent. without any evidence of overdosage. This showed that large doses of alkali could be given, provided their effects were followed by determinations of the carbon dioxide in the blood. The patient had been under a tremendous handicap owing to his very low alkali reserve.

The CHAIRMAN said that the suggestion made by Dr. Hamill had occurred to him, and he thought it might be wise to begin by administering a small dose of insulin intravenously rather than a large one subcutaneously. If a rabbit were given insulin hypodermically it would suffer from hypoglycæmia in half an hour. It could be brought round from this state, but its troubles were not then over, for in another hour it would be down again. It had to be treated repeatedly for several hours. In cholera hypertonic saline had been found preferable to normal saline, and it might also be better for the diabetic.

Dr. CAMMIDGE pointed out that Joslin in pre-insulin days had strongly favoured the administration of sodium chloride to patients with acidosis, because it kept the ketone bodies locked up in the tissues, so preventing them from circulating and doing damage.

Dr. GRAHAM, replying for himself and Prof. Dodds, said that he had simply given saline because the blood was sticky. Prof. Dodds agreed that the saline should be hypertonic and thought that it would be wrong to leave out sugar as a general rule because of the danger of passing too quickly from hyper- to hypoglycæmia.

Dr. LAWRENCE remarked that insulin did not act particularly in the blood, and that its action was usually protracted. The continued effect of large doses could easily be explained without assuming a delay in the skin. He had tried intravenous injection in a case where subcutaneous administration had failed, but without effect.

Dr. CAMMIDGE said he always began with a small intravenous dose of insulin, taking some blood away for testing at the same time, and went on giving small doses until a definite effect was obtained. It was possible to carry out sugar estimations at the bedside by the picric acid method, and to obtain comparable results.

WAR SECTION.

AT a meeting of this Section on Dec. 10th, with Lieut.-General Sir MATTHEW FELL, the President, in the chair, a paper on

Some Common Problems in Naval Hygiene

was read by Surg.-Commander P. M. RIVAZ. From what he said it appears that ventilation by punkah-louvres, which direct the entering air to the point where it is desired, are highly successful in the Navy, and exhaustion of air is serviceable in galleys, lavatories, and engine-rooms, though not in cabins or mess-decks. Constant vigilance by ventilation committees is needed to keep the supply of air working well. Fans must be rested, in cabins and mess-decks by day, in offices by night. Current opinion is in favour of more table fans. Clothing must be very light in the tropics; officers are apt to be too much clothed. If stokers working on coal fires wear too little they get scorched; if too much they get heat-stroke. Deficiency diseases and diets suitable for the tropics are under investigation. It is hardly possible, Surg.-Commander Rivaz considers, to compare the prevalence of tuberculosis in the Services with its prevalence in civil life, where notification is still very uncertain. Every man under 36 in the Navy is weighed once a quarter, and all chests are examined every six months, but the early doubtful case is still a difficulty.

In the discussion following this paper Major-General H. P. W. BARROW said that ventilation and the reduction of overcrowding had been found of great importance in relation to troop transport by sea. With enlarged cubic space, better spacing of hammocks, hospital admissions in troopships had gone down from 631 in 1914 to 277 in 1926. Experiments on vitamins and diet were to be undertaken in the East and much was hoped from them, also from the forthcoming report of the Joint Committee on Tuberculosis.—Fleet-Surgeon W. E. HOME said that overcrowding had been defined by Sir Thomas Fraser as a function of the number of persons occupying a space and the efficiency of the ventilation of that space. He (the speaker) had seen men with only 100 cubic feet of space develop illness from overcrowding in a month.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A MEETING of this Society was held at St. Bartholomew's Hospital, London, on Jan. 4th and 5th, with Prof. E. H. KETTLE in the chair.

J. W. McNee (London) discussed the pathological classification of chronic splenomegalies met with in Britain and drew special attention to the common type starting with hæmorrhage round the ellipsoids with subsequent fibrosis and siderosis, the actual gross enlargement being due to venous obstruction. He regarded true Banti's disease as very rare.—J. M. Ross (London) exhibited a specimen of the rare form of splenic enlargement due to overgrowth of the Malpighian bodies (Foix and Roemmele type).—J. S. Young (Leeds) found that salts injected into the pleura stimulated hyperplasia of the alveolar epithelium in proportion to the valency of the kation. The cells are refractory to a second dose.—I. Berenblum (Leeds) obtained a few epithelial tumours in mice by repeatedly freezing the skin with CO_2 snow. Freezing did not increase the carcinogenic efficacy of tar which is actually diminished by mustard gas.—

H. J. B. Fry (London) discussed the incidence of positive Wassermann reactions in patients with malignant disease; those with buccal cancer gave a much higher proportion of positives than the rest, but on the whole syphilis appeared to have little relation to malignancy.—J. R. Perdrau (London) discussed the acute disseminated encephalomyelitis associated with vaccinia and other infections; he thought that the perivascular demyelination was probably due to a toxin. An example of the condition following measles was described by J. G. Greenfield (London).—D. F. Cappell (Glasgow) had found that sugar of iron injected intravenously was quickly taken up by endothelium, after a few days liberated into the blood in a recognisable form and thence taken up again by the histiocytes of connective tissue, lymph glands, kidney, and liver in which it remained (in mice) for many months.—R. D. Passey, G. M. Bonser, and M. J. Stewart (Leeds) from a study of human and animal melanomata concluded that the melanin was made by the tumour cells but that the great majority of cells in which it was found were large mononuclear phagocytes.—C. Price-Jones (London) has measured 500 red blood corpuscles in each of 100 normal adults; the smallest mean diameter was 66μ, the largest 7·49, the average 7·198. The excess of large cells in pernicious anæmia could be calculated from these standards.—F. Parkes Weber (London) described a case of generalised osteosclerosis with severe anæmia.—W. W. C. Topley, M. Greenwood, J. Wilson, and E. Newbold (London) showed how the efficacy of experimental vaccinations could be elegantly tested by exposing the inoculated animals with their controls to an epidemic established in a mouse colony, and gave some of the results they had obtained with *Bacillus aertrycke*.—F. C. Happold (Leeds) described his observations on the group relationships of Salmonella precipitinogens and the influence of cultural variations.—A. Felix and M. Rhodes (London) and R. M. Pitt (London) discussed various aspects of bacterial dissociation, and P. B. White (London) gave an account of some pitfalls in the agglutination of rough strains and showed a differential test for smooth and rough bacilli.—A. S. Strachan (Johannesburg) compared his post-mortem experiences in South Africa and Glasgow. Atheromatosis is very common in whites and natives, and calcification of the mitral value is the rule over middle age; high altitude, excessive exercise, and much sunlight might be causes. Arteriosclerosis is not more frequent than in Britain. Natives show a great excess of primary carcinoma of liver, not associated with bilharzia; tuberculosis of heart, pericardium, and spleen are relatively common, also hæmochromatosis. Lymphatic tubercle often resembles lymphadenoma.—A. Fleming (London) concluded that the bactericidal power of blood on pneumococci was due to the combined action of leucocytes and serum, but that phagocytosis was not a necessary part of the process.—G. H. Eagles and D. McClean (London) described the cultivation of vaccinia virus in tissue cultures of chicken embryo.—C. H. Andrewes (London) found that immune vaccinia serum had no effect on the lesion at the site of inoculation but prevented subsequent generalisation. Virus fixed to tissue cells was unaffected by serum.—J. B. Buxton (Cambridge) had reproduced caseous lymphadenitis in sheep by inoculation or feeding with the Preisz-Nocard bacillus.—R. E. Glover (Cambridge) confirmed the finding that contagious pustular dermatitis of sheep is due to a virus, filtrable with some difficulty, which withstands drying well. No inclusive bodies were found in the lesions. The disease occurs mostly in fat lambs in the summer and affects no other animals except goats—T. Dalling (London) showed that vaccination of ewes with formalised bacilli of the special type of *Bacillus welchii* prevented lamb dysentery as well as toxin-antitoxin mixtures; resistance is transferred from ewe to lamb through the colostrum.—S. Ellingworth, J. W. McLeod, and J. Gordon (Leeds) gave an account of the oxidation of dyes of the paraphenylenediamine series by various bacteria and pointed out the value of the production of Wurster's violet in diagnosis.—J. H. Dible and C. Weatherall (Cardiff) found that enterococci nearly always fermented æsculin; they give hæmolysis only on blood-agar, not in broth.—R. Ellis and C. H. Whittle (Cambridge) described an apparent epidemic of pneumonia in a country village.—D. Nabarro (London) urged that the frequent occurrence of real bacillary dysentery (Sonne, Flexner, parashiga, and Shiga) in Britain, especially in children, should be more widely recognised.—V. D. Allison and T. H. Ayling (London) described a new tellurite-copper-sulphate medium for the isolation of diphtheria bacilli.—H. W. Crowe (London) claimed that certain streptococci could be shown to have a selective affinity for bone.—Among the exhibits were: M. J. Stewart and A. C. Haddow (Leeds): "peculiar bodies" of pulmonary asbestosis obtained by lung puncture. H. J. B. Fry (London): three cases of chordoma. D. Nabarro (London): congenital syphilis with enlarged thymus and lymphoid hypertrophy. D. F. Cappell (Glasgow): myeloma (*a*) plasma celled, (*b*) type with tumour nodules and visceral lesions. M. J. Stewart and S. J. Hartfall (Leeds): chronic peptic ulcer at lower end of œsophagus. G. S. Williamson, I. H. Pearse, and R. McCarrison (London): experimental and spontaneous lymphadenoid goitre.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on Jan. 3rd, with Mr. GEOFFREY BATE, the President, in the chair, a paper on

Chronic Appendicitis and Conditions which Simulate It

was read by Mr. H. N. FLETCHER. In describing the various forms of pathological appendix seen at operation he referred to a not very common variety usually seen in children, in which there was very marked hypertrophy of the adenoid tissue of the mucosa and large fleshy succulent glands of the ileo-colic mesentery. Colicky pains of short duration, coming on especially after food, were the principal symptom. They appeared to be due to spasm set up by the hypertrophied mucosa, which did not necessarily show any histological evidence of inflammation. The enlarged glands might cause slight tenderness over them. It seemed probable that their enlargement was due to absorption of toxins from the appendix. There was no apparent enlargement of glands elsewhere, nor of the tonsils. In diagnosis of chronic appendicitis Mr. Fletcher supported the emphasis laid by J. Sherren and others on the importance of a history of a preceding acute attack, starting centrally; and of viewing with suspicion any case in which the pain had started in, or had been confined to, the right iliac fossa. None the less there were exceptions. He had operated on not a few patients with acute appendicitis who insisted that the pain had started in the right iliac fossa, and this was especially the case when the appendix lay in an extra- or retro-cæcal position. Again, there were cases of undoubted chronic appendicitis where there had been no acute attack, notably of the type in which a fæcal calculus caused a mild inflammation of the mucosa surrounding it. Cases not conforming to Sherren's rule should be scrutinised with the greatest care and every other possible cause canvassed in turn, with the help, if necessary, of X rays, and always with a routine microscopic examination of the urine. No history and examination was complete which did not include in its survey the urinary, generative, digestive, and biliary systems.

The speaker reviewed 100 cases in which he had operated for supposed chronic appendicitis, and in all of which at least one year or more had elapsed before

inquiry was made. Sixty-eight, or just over two-thirds, had been cured of the pain for which they sought relief. Thirty-two patients had had some return of pain or some minor disturbances which precluded them from being regarded as definite cures. Errors of diagnosis, the majority being cases of tuberculous glands, accounted for 12 of these failures. Sixteen patients, five of whom had undoubted appendicitis also, had ptosis of, or congenital membrane formation in, the proximal colon, which was probably the cause of their renewed pain. It was significant that of these 16 patients 15 were females of whom 11 were young adults. Twenty-nine patients with true appendicitis had dyspepsia also. Of these, 22 were cured by appendicectomy. Twelve had the flatulent and 17 the painful type of dyspepsia. Of these latter, there was in eight cases a strong mimicry of gastric or duodenal ulcer in that the pain was of a severe gnawing, cramping, or gripping type, constant in its time incidence after food, the attacks lasting one, two, or more weeks, with periods of complete relief between. Six of these patients were entirely cured by removal of the appendix. The concurrence of attacks of dyspepsia and the lighting up of appendicular symptoms was noted in several cases.

Mr. Fletcher discussed the differential diagnosis between chronic appendicitis, pelvic, urinary, glandular, and cholecystitic, and proximal colon diseases, paying special attention to the latter, which was the most common source of error in the female sex. In speaking of cutaneous hyperasthesia in appendicitis, he said he had found it far more frequently involving the neighbouring halves of the tenth and eleventh right dorsal segments than any other area, and though the cæcum might possibly also be represented in those segments, he regarded such hypersensitiveness as a valuable confirmatory sign of appendicitis.

INFLUENZA.

MEASURES FOR ITS PREVENTION.

A WIDESPREAD epidemic of influenza is reported from Canada and the United States, where it began in the west about the middle of October. Although mild in form it has caused a considerable increase in the general death-rate and at least a million people were infected before the end of last year. Some concern is felt, therefore, lest it should soon appear in this country, and though the latest published returns (see p. 102) show but little rise in the number of deaths ascribed to the disease, the advent of a serious epidemic within the next few weeks is by no means unlikely.

The Ministry of Health has therefore re-issued to local authorities its useful memorandum [1] on the subject. As a full abstract has already appeared in THE LANCET (1927, i., 248), we will now do no more than refer to some of the main recommendations made.

Attention is, of course, drawn to the need for efficient ventilation and to the dangers arising when many persons are aggregated in sleeping quarters where there is insufficient space between head and head. At the same time it is suggested that temporary overcrowding in trains, trams, omnibuses, and places of entertainment is probably a more important factor than home overcrowding in spreading infection.

"During influenza prevalence, those who are able to do so will diminish their chances of contracting the disease by keeping away from all places of public resort or social gatherings. Most persons are able to avoid at least some occasions of forming part of a crowd or assembly without prejudice to their necessary occupations, and should do so."

Apart from the use of good nourishing food, whose value is obvious in warding off respiratory disease, the measures considered include gargling of the throat and nose, the wearing of face-masks, and protection by vaccines. Gargling may be useful, and a satisfactory antiseptic for the purpose is thymol (e.g., one full tablespoonful of compound glycerine of thymol in a tumbler of hot water). A cheaper gargle, probably as effective, is dilute permanganate of potash (1 in 5000). On present knowledge it is not regarded as desirable to wear face-masks, though they may be occasionally needed by those attending the sick. There is presumptive evidence, says the memorandum, that something can be done by the use of vaccines of suitable composition to lessen the risk of the attack being complicated by secondary infections. Vaccines may suitably consist of killed emulsions of pneumococcus, streptococcus, or Pfeiffer's *Bacillus influenzæ* separately or in combination, and though such direct evidence as the Ministry has been able to collect does not encourage an optimistic view of their value, there exists testimony by individual observers to their good effect in some cases.

On the precautions to be taken when attacked the memorandum states:—

"Continuing at work after the first symptoms appear is bad for the patient, and may be dangerous to others. Workers obviously ill should at once be sent or taken home. Where influenza is prevalent, no person should in any way be penalised for staying away from work, bona fide, for even a slight attack of influenza or any form of feverish cold. On the contrary, he should be expected and required so to do.

"At the first feeling of illness or rise of temperature the patient should *go to bed, keep warm, and seek medical treatment.* .... Relapses and complications are much less likely to occur if the patient goes to bed at once and remains there till all fever has gone for two or three days; much harm may be done by getting about too early. Chill and over-exertion during convalescence are fruitful of evil consequences.

"The early stages of an attack are the most infectious, but infection may persist throughout the illness, and isolation should be maintained at least till the temperature is normal. If the patient cannot occupy a separate room the head of the bed should, if possible, be screened off from the rest of the apartment.

"The virus of influenza is easily destroyed, and extensive measures of disinfection are not called for. Expectoration should be received when possible in a suitable receptacle in which is a solution of chloride of lime or other disinfectant. Discarded handkerchiefs should be immediately placed in disinfectant or, if of paper, burnt.

"The liability of the immediate attendants to infection may be materially diminished by avoiding inhalation of the patient's breath, and particularly when he is coughing, sneezing, or talking. A handkerchief or other screen should be held before the mouth, and the head turned aside during coughing and sneezing. The risk of conveyance of infection by the fingers must be constantly guarded against, and the hands should be washed at once after contact with the patient or with mucus from the nose or throat."

The rest of the Ministry's memorandum is devoted to the action to be taken by sanitary authorities to combat outbreaks. It deals with the questions of education of the public and profession, notification, closure of schools and places of entertainment, ventilation of trains, 'buses, and trams, disinfection, organisation of medical and nursing services, and institutional treatment. It is thought that schools may sometimes be closed with advantage in rural and small urban districts where the children do not mix much out of schools hours.

[1] Memorandum on Influenza (revised edition). London: H.M. Stationery Office. Pp. 14. 2*d*.

LORD NINIAN HOSPITAL, CARDIFF.—This Roman Catholic Hospital was founded in 1918 by the Dowager Marchioness of Bute in memory of her son, Lord Ninian Crichton-Stuart, who fell in the War. The announcement of her intention to place the management in the hands of trustees has led to the resignation of the entire nursing staff, on the ground that "the institution cannot be run under trustees." The nurses are Sisters of the Order of the Sacred Heart, and they believe that the new arrangements would hamper their work. Lady Bute has now set aside a substantial sum for the endowment of the hospital in perpetuity.

Reviews and Notices of Books.

FUNGI AND FUNGOUS DISEASES.

The Adolph Gehrmann Lectures. By Prof. ALDO CASTELLANI, K.C.M.G. (Hon.), M.D., F.R.C.P., Professor, Tropical Medicine, Tulane University, New Orleans; Director, Tropical Medicine and Dermatology, Ross Institute, London. Chicago: American Medical Association. Illustrated. Pp. 203.

IN an introduction to this admirable series Prof. Castellani says that "20 per cent. of all tropical diseases are due to fungi, and . . . diseases due to fungi are also not at all rare in temperate climates." There is no doubt that fungous diseases, if not on the increase, are at least more frequently recognised, both clinically and in the laboratory, than they were a decade ago, and no small part of the credit for this advance is due to Castellani's researches on mycology. The science of mycology is older than that of bacteriology, but took second place after the stir created by the discoveries of Pasteur and Koch, and is almost entirely neglected in the medical curriculum at the present day. The average reader will be discouraged in his attempt to make a close study of a subject which has so difficult a nomenclature. Even the dermatologist will find the going hard, but to him, as also to the pathologist who takes an interest in the practical side and the cultural proof of mycotic disease, this collection of reprints from the *Archives of Dermatology and Syphilology* will be found most stimulating. The first lecture, which occupies no less than 103 pages of closely printed text, is given to the fungi, their morphology, methods of culture, and classification. The second lecture (44 pages) deals with certain diseases due to fungi, including those of the tonsils and bronchi, and mycotic invasion of the nervous system. Cutaneous affections due to fungi—and these, as every dermatologist has come to realise, are much more common than was hitherto suspected—render the remaining 55 pages the most interesting and important of the series. Particular attention should be paid to the sections which suggest a possible cause of ano-genital pruritus and eczema. It would appear from some of the case records that this distressing and intractable affection does not always present a typical clinical picture; and it may require repeated microscopic and cultural tests by a skilled mycologist to determine its true nature and institute proper treatment. The text of these lectures is crammed with data, and we feel some sympathy for the medical student of the future who, when the subject of mycology is once more established in the curriculum, will be expected to grasp its fundamentals in the same way as his predecessor must master the elements of bacteriology to-day.

There is no treatise on clinical mycology in the English language which will stand comparison with this admirable survey of the subject up to the year 1926, when the lectures which form its pages were delivered.

AN INDEX OF DIFFERENTIAL DIAGNOSIS OF MAIN SYMPTOMS.

Fourth edition. Edited by HERBERT FRENCH, M.D., F.R.C.P. Bristol: John Wright and Sons. 1928. Pp. 1171. 63*s*.

THIS book has been out of print now for over five years, the third edition having been reprinted for the last time in 1922. Its reappearance will be welcomed. The index is compiled on the assumption that a particular symptom attracts special notice in a given case, and that the diagnosis has to be established by differentiating between the various diseases to which this symptom may be due. Thus, supposing a patient consults a physician or surgeon and presents some noticeable and perhaps isolated symptom or sign, for which there is no obvious cause, various paragraphs in the book provide a full list of the possible causes and the differential diagnosis of each is freely discussed. The sections on vomiting, aphasia, and swelling in the right iliac fossa provide typical examples. All vomiting is either central or reflex in its physiological relation to the vomiting centre; as central causes we find drugs, tobacco, uræmia, diabetes; as reflex ones we find three groups, gastric, general visceral—e.g., peritonitis—and central nervous—e.g., meningitis. Aphasia will be found under a section devoted to defects of speech, which differentiates between difficulty due to mental defects, aphasia proper, deaf-mutism, and dysarthria. Swellings in the right iliac fossa are similarly set out and described in proper contrast. There is at the end of the book also a subsidiary index of great length, being, in fact, almost one-quarter of the size of the rest of the volume. In this subsidiary index there seems to be set forth every subject for diagnosis under every possible heading; we are not quite clear as to the functions that this additional compilation of 227 pages is designed to serve.

The volume is admirably illustrated, there being now 701 illustrations, of which 179 are fully coloured. Among the uncoloured ones X ray prints are abundant and excellent. There is a special short paragraph on X ray methods in the last section in the book, wherein lipiodol injections into the lungs and uterus and the new methods of skiagraphy of the gall-bladder are well described and illustrated. Of the coloured illustrations those of various throat conditions (tonsillitis, quinsy, and faucial diphtheria), of acute inflammatory conditions of the eye, of actinomycosis, and of the face in mitral stenosis are noteworthy. Contributions are made by 20 individuals, the lion's share of the work falling to the editor.

The fund of knowledge contained in this volume is incalculable, and at the same time it is easy and pleasant to read.

DIE CHIRURGIE.

Edited by Prof. M. KIRSCHNER and Prof. O. NORDMANN. Lieferung 19. *Die Vorbehandlung, der Verband und die Nachbehandlung bei chirurgischen Eingriffen.* By Prof. O. NORDMANN. *Die plastischen Operationen der Haut.* By Dr. K. TIESENHAUSEN. Berlin: Urban and Schwarzenberg. Pp. 209. M.14.

IT is significant of the trend of modern surgery that the editor of a large system should himself write the sections dealing with pre- and post-operative treatment. Prof. Nordmann has compressed this vast subject into 110 pages, but his article is notable for its breadth of view, its sane outlook, and practical value. He lays stress upon the necessity for a full and fairly complete examination of the patient before submitting him to an operation. Only in this way can risks be estimated and dangers anticipated. Prof. Nordmann describes those methods which he has found to be helpful, criticises from experience others which he has discarded, and does not hesitate to point out deficiences in our knowledge of the treatment and prevention of complications such as thrombosis and post-operative lung affections. His views on the preparation of patients with pyloric stenosis, jaundice, heart affections, kidney diseases, to take a few examples, are all interesting, and the very emphasis laid upon the necessity for careful consideration of the patient from every point of view is likely to stimulate interest in an important aspect of surgery.

Dr. Tiesenhausen has written a satisfactory account of plastic skin surgery. The first part is general in scope, and is followed by a special part in which individual operations are described. Some of the less known and rarely practised procedures find a place in this section—for example, the substitution of a toe or finger for a missing thumb, and though the accounts are fairly adequate their value would have been enhanced if more details had been given. However, the reader can always refer to the original sources of information on the rare occasions when

specially detailed knowledge is required, and the bibliography at the end of the work will tell him where to look.

THE HARVEIAN ORATION, 1928.

Cardiovascular Diseases since Harvey's Discovery. By Sir HUMPHRY ROLLESTON, Bart., K.C.B., M.A., M.D., F.R.C.P., Regius Professor of Physic, Cambridge. London: Cambridge University Press. 1928. Pp. 149. 3*s.* 6*d.*

IN choosing this subject for his Harveian oration Sir Humphry Rolleston made a contribution to the history of medicine worthy of the tercentenary of publication of Harvey's famous work. Had he desired an alternative title he might with justice have called it "Who was Who in Cardiology." There are four chapters which deal respectively with the anatomical, clinical, instrumental, and physiological aspects of the subject, each chapter being followed by a bibliography giving proof of the amount of time and labour which the author must have devoted to compiling his oration. An author and a subject index add greatly to the value of the book as a work of reference.

BIBBY'S BOOK ON MILK.

Sect. II. *The Law relating to the Sale of Milk.* Twelfth edition. Liverpool: J. Bibby and Sons. 1928. Pp. 487. 30*s.*

THE miscellaneous contents of this section of Bibby's Book on Milk include a historical introduction, suggestions for the guidance of local authorities, analysts, milk vendors, and others, hints for the defence against milk prosecutions, the text of the Sale of Food and Drugs Acts and similar legislation, notes on the statutes, a summary of the case law, and a collection of statistics, departmental circulars, and statutory rules and orders. While this volume, entitled the Law relating to the Sale of Milk, is not a lawyer's text-book in anything save price, it gathers together much information not otherwise readily available. An editorial note for preoccupied readers explains that one object of the book is to expose the injustice of the present law and the need for its amendment. First, it is said, the law ought to be changed so as to separate the attempt to punish fraudulent adulteration from the attempt to control the quality of milk. Secondly, the fraudulent sale of adulterated milk being a mere form of theft, it is contended that the prosecution should be made to prove its facts and to establish the criminal intention of the accused in the ordinary way. Thirdly, if the quality of milk is to be controlled (and a policy of laissez-faire is nowadays in this respect unthinkable), the suggestion is made that the control should not be associated with criminal procedure.

These propositions are, of course, controversial. Though the powers of local authorities are unevenly exercised, and though our system of controlling milk-supply still tolerates too much tainted milk, we have reached improvement largely by the establishment of a hard-and-fast standard enforced by criminal prosecutions. It is true that the element of criminal intent is not insisted upon; but the community is entitled to protect itself in sanitary matters by weapons inappropriate in other circumstances. The householder whose chimney takes fire is liable to a fine however innocent his mind may be of criminal motive. The farmer or milk vendor is treated in the same summary fashion, but perhaps with better justification. Milk below standard may be pure and pure milk may be below standard, but it is doubtful if the good farmer and the honest milkman are in danger of heavy penalties in the course of their business. The reports of important cases are well set out though they naturally vary in length. The authors of the book deserve sympathy in that the Sale of Food and Drugs Acts, which they print in full, have been swept away (except in Northern Ireland) a few months ago by the consolidating Food and Drugs (Adulteration) Act of 1928. An addendum slip mentions this fact, and says the text of the new statute will be found in a supplement (Supplement 8, pp. 31, 9*d.*) which, in fact, has since reached us, together with Supplement 7, pp. 7, which gives an account of the case of Palmer *v.* Houson (Presumed Watering). The passing of the 1928 Act makes no substantial change in the law and leaves the decided cases untouched, but it alters the form of the statute law and upsets all previous references thereto.

MONGOLISM.

By KATE BROUSSEAU, Docteur de l'Université de Paris; Professor of Psychology in Mills College, California. Revised by H. G. BRAINERD, M.D. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1928. Pp. 210. 20*s.*

ALTHOUGH this handbook is based upon ten years' personal experience of the care of mental defectives, its object is not so much to provide a first-hand authoritative treatise on the subject as to collate and compare theories of the many observers who have written on this difficult branch of psychiatry. Its bibliography is very full, and as a summary of the literature alone it is of great value. It also contains many carefully compiled tables of anthropological and psychological data obtained from mongols, is illustrated with many excellent photographs, and includes much practical advice on the management of these patients. The author's conclusions from the available statistics do not bear out many of the most accepted theories as to the ætiology; she cannot agree that the condition is due to reversion to a primitive mongol type, to parental alcoholism, tuberculosis, syphilis, or neurosis, to aged parents or reproductive exhaustion. She infers, as many other workers have been forced to do, that the cause must lie in some obscure disturbance of the ductless glands. Some endocrine disturbance, she says, may be found in every mongol. This opinion is not shared by Prof. Hans Curschmann in his recent work "Endokrine Krankheit"; he admits that the condition probably bears some relationship to endocrine disturbances, but holds that it is certainly not due to them.

EVOLUTION.

How You Began: a Child's Introduction to Biology. By Mrs. AMABEL WILLIAMS-ELLIS. With two prefaces by J. B. S. HALDANE. London: Gerald Howe, Ltd. 1928. Pp. 96. 2*s.* 6*d.*

IF anyone wants to teach a child that during the course of his individual development in his mother's uterus he has gone through the various stages of his ancestral evolution (or perhaps it should be "her," for little girls are believed to have more intellectual curiosity than little boys) they will find an admirable guide in this book. Most people will prefer that he or she should learn the Bible and the multiplication table. Like many books professedly written for children, Mrs. Ellis's will be most useful for grown-ups, and they are likely to read it with profit.

CLINICAL ASPECTS OF THE ELECTROCARDIOGRAM.

Second edition. By HAROLD E. B. PARDEE, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical School. London: William Heinemann, Ltd. 1928. Pp. 242. 25*s.*

WHEN electrocardiography was first introduced its most obvious application to clinical medicine was in the diagnosis of the different types of cardiac arrhythmia. Since then our knowledge of the clinical aspect of these disorders has advanced considerably, and now in the majority of cases instrumental aid is no longer necessary for their recognition. Clinical electrocardiography has thus entered on the second phase of its career. It is being used to supplement the other methods of diagnosis in providing evidence

of those myocardial changes which fail to give rise to abnormal physical signs. In the various types of angina in particular the objective evidence of myocardial disease is often scanty, if not entirely absent, and it is in such cases that an abnormal electrocardiogram is of the greatest value. Some of these abnormalities, such as the changes which follow coronary occlusion, are now well recognised; but there are many features of abnormal records the significance of which is still obscure. A useful summary of the present position of our knowledge is given in Dr. Pardee's book. The author devotes four chapters to the description of the various abnormal features which are liable to appear in the auricular and ventricular complex. These chapters will be of interest to physicians who are already conversant with modern work on the diagnosis of heart disease. Another section of the book gives a clear and concise description of the more common electrocardiographic findings in disorders of rate and rhythm. The author points out that there are two groups of people who misjudge the value of this particular method of examination. The one group believe that electrocardiography can tell everything, and the other that it can tell nothing of practical importance. To both of these his book should prove a salutary corrective.

Two concluding chapters are devoted to certain theoretical considerations and to technique. With one or two exceptions, such as the statement on p. 129 that vagal pressure *never* fails to slow the ventricular rate in cases of auricular flutter, the views expressed are those generally held by workers in this field of medicine. The illustrations are well chosen and their reproduction is equally satisfactory.

AMERICAN MEDICAL ASSOCIATION OF VIENNA.

Twenty-fifth Anniversary Number. Pp. 306. *Ars Medici*. The Journal of the A.M.A. of Vienna. Vol. VI., No. 11. Published monthly in Vienna, IX. Spitalgasse 1 A.

THE first of these publications sets out the progress that has taken place in the work of the American Medical Association of Vienna, since it was established in that city at a Thanksgiving Day banquet in November, 1903. At its formation the Association had only 35 members; at present we learn that it numbers over 6000, more than 1000 having joined within the past two years. All medical men coming to Vienna for study are invited to enrol their names in a registration book kept by the Association, in return for which they will be furnished with information of the sort that they will require in a foreign city, and will be allowed free access to a reading-room and a reference library, and an institution where they will have opportunities both for scientific discussion and social intercourse. The bulk of the anniversary number consists of a detailed list of the clinical and pathological courses which can be arranged through the Association, with full names of the professors or lecturers, indications being given as to where the instruction may be met with. All the courses are conducted in the English language except where German is specifically mentioned as the only language employed.

Ars Medici is the latest achievement of the Society—its official monthly organ. It contains abstracts and reviews of foreign, especially Austrian and German literature, as well as particular notes on the activities of the Association.

ST. BARTHOLOMEW'S HOSPITAL REPORTS.

Vol. LXI. London: John Murray. 1928. Pp. 260.

THIS year's volume contains, besides domestic matter and abstract reports of the transactions of the Paget Club and the Abernethian Society, 17 original papers with many excellent illustrations. Of these the first seven deal with the respiratory system. Prof. F. R. Fraser contributes a short paper on dyspnœa, and Dr. F. G. Chandler and Dr. J. V. Sparks a practical article, illustrated by eight very clear X ray photographs, on the diagnosis of bronchiectasis by means of lipiodol injections. Pneumothorax is fully discussed in three contributions. Mr. J. E. H. Roberts describes the results of collapse therapy in eight cases of bronchiectasis, Dr. F. H. Young deals with the use and control of artificial pneumothorax in ambulant cases of tuberculosis, and Dr. R. Hilton with the more general aspect of the operation, including its history. Dr. C. Langton Hewer, in a paper on anæsthesia in thoracic operations, signifies a preference for nitrous oxide and oxygen, with differential pressure if the pleural cavities are opened; in extreme cases of obstruction from tumour he induces anæsthesia by chloroform and maintains it by the endotracheal method. Mr. Cortlandt MacMahon, the instructor of speech defects and breathing exercises at the hospital, describes the exercise treatment of empyema. Two cases of cystic serous meningitis of the posterior fossa, originating in the ear, are related by Mr. T. H. Just; Dr. E. Arnold Carmichael assesses the diagnostic value of the examination of cerebro-spinal fluid in ear and nose affections; and Mr. J. P. Ross writes on a number of cases of various intracranial injuries. Mr. J. Basil Hume reports the unfavourable results of the lead treatment of cancer at St. Bartholomew's. An unusual case of heart-block, with cardiograms, is described by Dr. Geoffrey Bourne; 50 cases of acute osteomyelitis are analysed by Mr. J. P. Hosford; Mr. Alexander Roche writes on torsion of the spermatic cord, giving case notes, tables, and bibliography, and illustrating his article with several microscopical pictures and a coloured drawing. Mr. R. T. Payne gives his experiences with the now popular sclerosing treatment for varicose veins; Mr. T. M. Thomas describes nine cases of femoral aneurysm, and Dr. E. M. Allott one case of rat-bite fever. As usual, the book is well bound and clearly printed.

JOURNALS.

INDIAN JOURNAL OF MEDICAL RESEARCH. Vol. XV., No. 2.—This number contains 26 papers of perhaps exceptional merit. H. E. Shortt, A. C. Craighead, R. O. A. Smith, and C. S. Swaminath describe transmission experiments in kala-azar with *Phlebotomus argentipes* which were, unfortunately, negative, and attempts to infect hamsters with *Leishmania donorani* by the oral and conjunctival routes similarly failed.—F. P. Mackie and S. N. Gore describe a hitherto unrecognised bacillus isolated from cases of sprue.—J. A. Sinton, in conjunction with P. J. Barraud, is responsible for morphological studies on some species of phlebotomus, and together with W. Bird and W. B. F. Orr has studied malaria with special reference to treatment.—P. J. Barraud contributes a study of the revision of the culicine mosquitoes of India.—R. N. Chopra collaborates with S. Ghosh and N. R. Chatterjee in a number of papers on the action of antimony compounds, concluding that it is doubtful whether urea stibamine is a compound of the nature suggested by its discoverer.—Contributions on Indian anophelines include papers by I. M. Puri on *Anopheles jeyporiensis* James and *A. moghulensis* Christophers, and on the relationship of certain morphological characters of anopheline larvæ to the classification of Indian anophelines in general. Bruce Mayne has found that *A. subpictus* can serve as host for the parasites of bird malaria.—E. W. H. Cruickshank and Sheonath Prosad have studied the action of insulin on the free muscle sugar of the normal and diabetic heart.—R. B. Lloyd and S. N. Paul have constructed protein graphs in kala-azar, both in treated and untreated cases.—G. R. McRobert has studied the hydrogen-ion concentration of the alimentary canal of the albino rat and has made observations on the size of the spleen, his results being in close accord with those of Barcroft.

THE LANCET.

LONDON: SATURDAY, JANUARY 12, 1929.

THE KING'S ILLNESS.

IT is now generally recognised that a startling improvement in the KING'S condition is not to be expected, but we are happy to say that no unfavourable developments have occurred during the past week. Events have justified the forecast that there would be ups and downs and that the course of the illness and of recuperation would consist in an increasing predominance of the former over the latter. Such progress, though slight, is definitely being made, and our readers will be especially glad to learn that the average rate of the pulse has diminished and that it is less easily disturbed by outside influences. In weighing the significance of these facts it must not be forgotten that there is still difficulty in feeding, wasting, and exhaustion, and that these cannot be overcome without long effort; especially is the exhaustion produced by the gallant and extended struggle for life, an element in the case which has throughout given the gravest anxiety. It is obvious that the moves forward at best will be slow, and that considerable periods may pass without any notable changes. For this we must be prepared, though it may not be easy for those who are watching the current of events to achieve an even frame of mind. From primitive times it has been the nature of mankind to demand miracles and to seek signs, and during a period of strain the press of the country has inevitably reflected this requirement. In the diligent search for some new thing an unwelcome prominence has lately been given to one doctor and to a new remedy, or rather to an old remedy revived in a new form. We offer our sympathy to Prof. DODDS, whose valuable biochemical investigations have been given too wide a significance in many quarters. Although he was able to give much assistance by analysis and by contributing to discussions on the data thus obtained, we are authorised to say that his advent on the scene did not coincide with any dramatic change either in the patient's condition or in the treatment adopted. His distinguished work at the Middlesex Hospital is so well known to the medical profession that he need fear no misunderstanding of the situation among his colleagues. But it is regrettable that among those who are less well-informed some of the speculations which we have read may have a misleading tendency. When such full information has been given regularly in the bulletins upon all the essential points in the story, it must be dangerous, however strong the temptation, to rely upon unauthenticated stories for views or judgments.

THE TREATMENT OF EARLY BREAST CANCER.

THE technique of the classical operation for cancer of the breast has long been standardised at a very high level of efficiency, and it is difficult to see how it could be further improved unless the whole paraphernalia of scalpels, clamps, and ligatures appertaining to a cutting operation are superseded. Many surgeons, however, are devoting attention to the development of a surgery of access, since, as Mr. SAMPSON HANDLEY pointed out in his Sylvanus Thompson lecture, published in our columns last week, a combination of surgery and radiotherapy may well lead us further than either could go alone. Such a view does not justify the exaggerated statements which have appeared recently in the lay press, where radium has been described as a "cure" for cancer which is likely to supplant operation. Such a statement is certain to do much harm, since it may induce patients to refuse an operation when operation is advisable; and it should not be made even for the wholly praiseworthy cause of collecting money from the public for the purchase of radium. Radiotherapy is no more a cure for cancer than is operation; it is a treatment the efficiency of which, like that of operation, depends upon the stage of the disease at which it is applied, and upon an understanding of the pathology of the condition. It would seem a truism to say that the successful treatment of a disease depends upon consideration of its pathology, were it not for the statement made by Mr. DUNCAN FITZWILLIAMS at a meeting of the Section of Surgery of the Royal Society of Medicine, reported on p. 74. He claimed that in the early stages of carcinoma of the breast the condition can be cured by a partial operation, removing only the growth and leaving the rest of the breast tissue behind. We believe that this procedure would be generally condemned as a retrograde step; indeed, this was made clear by some of the speakers at the discussion; but since the question has been raised, it may be timely to amplify some of the objections that were raised to a partial operation.

Only a few months ago Dr. JANET LANE-CLAYPON published a valuable monograph[1] in which she collected and classified the end-results of over 2000 cases of breast cancer treated at different hospitals by different types of operation, including the partial operation (removal of tumour only) as applied to so-called "early cases." This investigation, which was published by the Ministry of Health, was presumably carried out for the benefit of surgeons, but the lessons which it contains have apparently not yet been generally learned. An early case of breast cancer is, by definition, one in which the disease has not yet spread to the axillary glands. If such a case is treated by removal of the tumour only, the answer to the question whether the disease has, or has not, spread to the axillary glands rests entirely on the clinical examination of the axillary glands. On this point the figures quoted by Dr. LANE-CLAYPON are relevant. They show that

[1] Reports on Public Health and Medical Subjects, No. 51. Late Results of Operation for Cancer of the Breast. London: H.M. Stationery Office, 1928, and THE LANCET, 1928, ii., 507.

negative clinical findings for the axillary glands are incorrect in over one-half of the cases; that is, in spite of the glands not being palpable, they were, in fact, found to be invaded when examined microscopically. She points out that in just those cases which might be the most favourable a false clinical impression of the state of these glands may prejudice the patient's best chance of survival, since the radical operation is not always performed if the surgeon cannot detect enlargement of the axillary glands, and some practitioners still regard a case as non-malignant unless the glands of the axilla are palpable. It is admitted that the survival rates in those early cases where breast only or tumour only was removed approximate closely to those obtained for the radical operation; it may be conceded that in the majority of these cases the whole of the cancer was in fact removed, and therefore no recurrence was to be anticipated. If, therefore, the surgeon could be certain of removing the whole of the cancer in a conservative operation the results should be just as satisfactory as with the radical operation. Unfortunately, however, the palpation of the axillary glands has been proved to be unreliable, if negative, and to be incorrect in over half of the cases. In other words, it is impossible to diagnose with any degree of certainty an "early" case of breast cancer. Hence there can be little doubt that even in "early" cases there is a considerable risk if the radical operation is not performed.

There is yet another reason why, in breast cancer, removal of the tumour only is a dangerous gamble. The work of Sir LENTHAL CHEATLE, based on the histological examination of sections of the whole breast, has shown that the presence of a malignant new growth in one part of the gland is frequently associated with pathological changes in other parts, which represent a precancerous condition. Such a view is in accord with the results of recent work on experimental carcinogenesis. If, therefore, only the tumour is excised, that part of the breast which remains behind may contain several foci for the new development of further growths. Clinically, such a result would be described as a local recurrence, although it is really a new cancer, and Dr. LANE-CLAYPON'S figures show that in this type of operation recurrences are not infrequent. Sir LENTHAL CHEATLE'S method of studying whole sections of the mammary gland has shown the condition of "early breast cancer" to be a much more complex one than has hitherto been suspected, and has given valuable information on the types of epithelial hyperplasia which can be regarded as a precancerous condition. In fact, the many advantages of this method of ascertaining the state of the epithelium and the connective tissues of the breast in conditions which call for operative interference are so obvious that its general acceptance by clinicians and pathologists in this country and its extension to other organs is overdue. A recent Report of the Proceedings of the American Association for Cancer Research[2] shows that the value of the method has been recognised there, and by no less an authority than Prof. JAMES EWING. A change in nomenclature is always difficult to impose on a conservative profession, but Sir LENTHAL CHEATLE has, we think, made out a good case[3] for a drastic revision of classification of mammary swellings, and we commend the outcome of his arduous labour as a good starting ground for workers on breast physiology and pathology.

[2] Jour. of Cancer Research, 1928, xii., 258.
[3] THE LANCET, Jan. 5th, 1929, p. 37.

THE HEALTH OF THE YOUNG WORKER.

IT has been realised for some time that the extensive provisions made by the Government of this country for conserving the health of its workers leave two very important gaps unbridged. The first of these is the period immediately before school age, and this was the main problem to which the Board of Education's annual report drew attention last year.[1] Along the lines which Sir GEORGE NEWMAN then indicated some progress has been made, as he relates in this year's report (p. 96). There are quite a number of nursery schools where the toddler and the child under five can spend their days "playing at work" in a healthy atmosphere, with good food, and where they can learn the early adaptation to life which will help them when school comes along. Although so far only weakly children and those from poor environments have been selected, yet an attempt to trace the subsequent history of the nursery scholar has shown that all have held their own—in their teachers' words they have been found "alert, eager to learn, well-behaved and equipped with habits and attitudes which made for progress and happiness." The solution of the problem may have been arrived at, and we must hope that such accommodation will be extended until all who can benefit from the provision can be accepted at nursery schools.

The outlook for the "post-school child" is less happy than that for the "pre-school child," and Sir GEORGE NEWMAN devotes considerable attention this year to the position left by national medical services between the school-leaving age and the age when the young worker can be enrolled under the National Health Insurance Act. The child who leaves school at 14 nowadays is healthier, heavier, taller, cleaner, and altogether a better and more promising individual than was the child who left five or ten years ago. To-day this young citizen loses less time from his work owing to sickness; there is less malnutrition, less tuberculosis, less glandular disease, less defective sight and hearing, better teeth. To a certain extent—though not yet universally—he has received instruction on how to keep fit, and year by year the education authorities strive to make this teaching more practical and to instil the habit of hygiene more thoroughly, so that the adolescent may keep his health into maturity. Yet there is a place where the promise is not fulfilled; in the two or three years succeeding the leaving of school the average boy and girl tend to go backward in health. With the best of teaching at school it is, perhaps, too much to ask of them that they should maintain hygienic habits without any encouragement or assistance, for, as Sir GEORGE NEWMAN points out, the adolescent is a gregarious animal and he will follow his herd. Apart from movements such as the Boy Scouts and Girl Guides, there is no organisation for stimulating healthy living. The young worker is nobody's business. The Committee on Education and Industry has recently issued a report dealing with the public system of education in relation to trade requirements.

[1] THE LANCET, 1927, ii., 1245.

This report urges close and continuous coöperation between the life of the schools and the life of the office or workshop, so that the two would no longer be disconnected episodes, but from both sides would be regarded as a single period in the training of the citizen. From the point of view of health continuity is a paramount necessity. This second gap is bridged in certain cases—relatively few but extremely important—by a factory welfare scheme. Large and progressive firms are realising more and more that it pays to provide medical advice and sickness benefits for their employees, and in many cases the firm's doctor is in close touch with the school medical officer. He examines the young employees periodically, treats minor ailments, and sees that defects are remedied. Were such provision for continuity universal, the gap would be effectively bridged; unfortunately this occurs in only a very small proportion of the young people who leave school every year, and the more efficient it is the more carefully is the entrance guarded, so that in effect it is the healthiest and strongest who receive this care. Other lines along which a bridge might be built are indicated by the juvenile employment and advisory bureaux and the work of the certifying factory surgeon. In Birmingham, information from the medical cards of school-leavers is filed by the employment bureau, so that unfitness for any particular kind of work is recorded, and similar coöperation has been arranged in other districts. The examination of the certifying factory surgeon is simply one to ascertain fitness for a given employment; it cannot be regarded as a satisfactory review of the child's health. Where the certifying surgeon is also a school doctor, and still more, where he is also the medical officer of a firm's welfare scheme, continuity between school and factory is attained; with this situation in view the Board of Education is anxious to ensure closer coöperation between school inspection and certifying inspection, and is willing to transmit medical records for this purpose.

It is obvious that the present position offers several possibilities, but that the establishment of a really satisfactory scheme of care for the young worker presents grave administrative difficulties. We may anticipate an increasing number of factory welfare schemes and an increasing sense of need for coöperation between individual certifying factory surgeons and school medical officers. This, however, is not enough. There should be some official scheme, comparable in excellence with the School Medical and Infant Welfare Services, to ensure that the health of our growing population at the critical ages of 15 and 16 shall not depend on individuals or vary in different localities. Most important of all, perhaps, the scheme must include supervision of the health of those who are not actually engaged in employment. This is brought home to us by the present lamentable situation in the mining districts. It is no unusual thing to meet young men there who, since the time they left school six or seven years ago, have never done a day's work, through no fault of their own. However greatly the young worker may need medical supervision there can be no doubt that the young workless boy and girl need it far more. Idleness is the most unhealthy environment an active organism can have, and its effects are not confined to the purely psychological field, as every practitioner knows. Idle or employed, the period of adolescence is perhaps of all periods that when to dispense with medical help can be least afforded, and the opportunity for obtaining health-teaching at this critical age should be forthcoming.

MATERNAL MORTALITY.

SINCE 1917 every puerperal death occurring in Aberdeen has been notified to and investigated by the local authority, this scheme having been instituted by Prof. MATTHEW HAY when he was medical officer of health of the city. His successor, Dr. PARLANE KINLOCH, with the assistance of Dr. J. SMITH and Dr. J. A. STEPHEN, has thus been able to collect, over a decade, statistics of 252 deaths occurring in 37,984 confinements. They have reviewed this material in a report on Maternal Mortality in Aberdeen, 1918–27 (H.M. Stationery Office, 1928, pp. 60, 1s.). No definite relation between environmental conditions and puerperal mortality were revealed by the inquiry and no new light was thrown on the influence of personal factors such as age, occupation, or habits of the mother, illegitimacy, or syphilis. The hæmolytic streptococcus was incriminated as the most important bacterial cause of puerperal sepsis, but on theoretical grounds little encouragement is given to the hope that any general scheme of prophylactic immunisation against this group would be feasible at present. On the other hand, statistical evidence was obtained of the value of antenatal services in reducing maternal mortality, and the expansion and improvement of these services is considered highly desirable.

The most interesting analysis concerns the comparative maternal death-rates in the practices of doctor, midwife, and institution. Table XII. shows that the death-rate per 1000 maternity cases delivered by midwives is 2·8, by doctors 6·9, in institutions 14·9. This last figure, which includes only cases untouched before admission, is surprisingly high; it is attributed by the authors to contagion—the term being used to embrace all the channels by which any droplet or spray infection, such as a streptococcal infection, is spread. The suggestion is not that infectious mucous secretions or purulent discharges could possibly be conveyed by trained attendants directly from uterus to uterus, but that a carrier may spray streptococci on to sterilised hands or instruments and these in turn infect the maternal passages. On this theory outbreaks of puerperal fever could be materially diminished in number and gravity by restricting the number of patients admitted to each ward and spacing their beds.

A suggestive fact is that there were no deaths among the 445 midwife cases in which forceps were used by the doctors called in to help. The authors discuss and reject the argument that the higher puerperal death-rate in the practice of doctors is necessarily due to trauma caused by premature instrumental interference, and hold that this is more likely to be due to contagion spread by carriers, doctors being more liable to become streptococcal carriers than midwives. Criticism of this and other conclusions will doubtless be welcomed by the compilers of this report, whose constructive scheme for the development of a new midwifery organisation will not escape dissent. But the figures provided are of the utmost value, and if they prove to be typical may well form the basis of reform of the midwifery services of Great Britain.

ENLARGEMENT OF ALTRINCHAM GENERAL HOSPITAL.—Prof. A. H. Burgess, of Manchester, has just opened an enlargement of this hospital, which has cost £10,000. The additions consist of a four-storey block with a male surgical ward, two private wards, a children's ward of 12 beds, and an enlarged operating ward.

Annotations.

"Ne quid nimis."

PUBLIC HEALTH AND LOCAL LEGISLATION IN 1928.

As has often been observed, our local Acts contain experimental legislation which, if found satisfactory in a limited area, can afterwards be extended to the country at large. In other words, what a local Act says this year a general Public Health Act may say in ten years' time.

The chief innovations in the local legislation of 1928 seem to be visible in the Sheffield Corporation Act, whereof several clauses may furnish useful precedents. The corporation, for instance, is authorised to construct inspection chambers at its own expense for the purpose of examining the nature of the discharge into sewers from manufacturing premises; in addition to the power to prevent the discharge of solids and offensive liquids into sewers the corporation has taken power to provide plant and buildings for treating and utilising refuse. Another clause allows the corporation to require the conversion of all other kinds of closet into ordinary fresh-water closets, cess-pits being got rid of, and the corporation bearing not less than one-third of the cost. Other novel provisions in the Sheffield Act belong rather to local government than to public health; by-laws, for instance, may regulate the thickness of garage walls and the providing of projecting hoods over garage openings; a £50,000 fund for land purchase may be formed with a contribution not to exceed a twopenny rate from the ratepayers' pockets annually; and, as a matter of organisation, the power to delegate authority to committees is extended. London and Rotherham, as well as Sheffield, have taken powers for the removal of infirm and diseased persons to institutions on an order by the justices. At Rotherham a justice's warrant may now authorise a medical officer of health to enter any premises where it is believed that there is dangerous infectious disease. The extended definition of infectious disease is among the new health provisions of a number of local authorities—Dartmouth, Exeter, Caerphilly, Llandudno, Cleethorpes, and Bridgwater, as well as Sheffield. The urban district council of Cleethorpes has taken power to appoint deputies to various officers including the medical officer of health. Other more familiar features of various local Acts of 1928 are those requiring the giving of information to medical officers, or requiring laundrymen's names to be furnished, or (as at Stoke-on-Trent) requiring dairymen to furnish lists of their customers. Llandudno, Cleethorpes, Sheffield, and Bridgwater now have powers for the municipal supply of antidotes; other forms of municipal activity are the London County Council's powers as to golf courses and Blackpool's to provide and run an aerodrome. It is nowadays hardly necessary to mention common clauses such as those as to tuberculosis (disinfection of premises and prohibition of infected persons handling food), or schools (parent to notify head teacher of child's infectious disease, and power to close Sunday schools or entertainments during epidemic), the cleansing of filthy premises, the inspection of stables, and the removal of dead bodies. In addition to the now almost universal legislation in respect of ice-cream and potted meat manufacture, Sheffield has taken power to refuse the registration of premises for such manufacture. An Exeter precedent is worth noting; the corporation is to register not only the premises used for ice-cream manufacture and sale, but also the manufacturers, vendors, merchants, or dealers themselves. As the Select Committee on Local Legislation observes in its last report, if registration applies to premises alone, a dealer can, after complaints against his premises, move outside the borough and bring in ice-cream manufactured under insanitary and unsupervised conditions. Cleethorpes has arranged for the registration of persons dealing in shell-fish, Dartmouth for regulating fried-fish shops, and Dudley for prohibiting the inflation of meat carcasses. In a number of areas food poisoning is made notifiable. Exeter has fresh powers of closing registered slaughter-houses—e.g., when the premises have been unused for six months.

Details of these and other items are to be traced in the official index to the local and private Acts of the session, published by H.M. Stationery Office (price 1*s.* 6*d.* net). This publication covers the main session of 1928—i.e., that which ended in August. Some progress was made with other proposals for local legislation during the autumn session which was adjourned on the eve of Christmas, but the Bills then dealt with must wait till 1929 for their chance to pass into law.

MALARIA IN CORSICA.

THE ill-effects of malaria in Corsica have led to a series of flying visits and reports by experts, such as those by E. Roubaud and M. Leger in the spring of 1921, and by the brothers E. D. and E. T. Sergent, with L. Parrot and A. Donatien, in the autumn of the same year. Again, in 1922, the Société de Pathologie Exotique pressed the urgency of the problem on the French Government, who in turn requested the League of Nations to conduct an independent inquiry—effected by E. Marchoux and L. Raynaud in 1925. Finally, in 1926, mainly under a subvention from the Division of Hygiene of the Rockefeller Foundation, the policy of hurried inspections gave place to a continuous investigation under the general direction of Prof. E. Brumpt, and consisting of a laboratory at Bastia, in the north of the island, outside the malarious zone, and a dispensary at Porto Vecchio within it. An interim report on this important work is now issued.[1]

After sketching the history of malaria and anti-malarial measures in Corsica, Prof. Brumpt's report deals with matters as they are. The population is just over 250,000, yet outside the island are twice that number of Corsicans, valuable members of the French Colonial administrations. Within the island an arresting feature is the extent of the daily or seasonal migration from the malarious eastern coastal plain to the healthier hills. For example, of the 1500 persons classed as inhabitants of Porto Vecchio, never more than 2000 live there, the figures in the malarious season falling to 600, while malarial infection, established by the finding of plasmodia, is four times greater in those who stay than in those who flit. All three species of plasmodia are present, the dangerous subtertian, the quartan, and the tertian prevailing in that order. The wide coastal marshes breed anopheles even when the salinity is as high as 26·32 g. to the litre, but where iron causes an irridescent scum, larvæ are absent. Nearly all anopheles are *A. maculipennis*, few adults have been found infected, and the inquiry shows that, as elsewhere, hibernation is by impregnated females, not by eggs as had been locally suggested. As a larvicide, dusting with Paris green has been found most efficient, yet the extent of the water surface to be covered is held to preclude its general use. The employment of an aeroplane for the purpose, well reported on from the United States, is not considered, but from the description of the country would seem to hold great promise. Local conditions are considered unsuited for oiling, but *Gambusia holbrooki*, introduced from America and bred at Bastia, has been strikingly larvicidal in nearly every local type of water. A screen of animal houses is believed to have been of marked value against attacks of the adult insect in certain cited instances. Quinine, it is urged, should not be issued wholesale for use as a general prophylactic. Its action is more economically concentrated on the infected.

The scheme in existence aptly materialises the advice of the first subcommittee of the Malaria

[1] La lutte contre le paludisme en Corse. Paris: Masson et Cie. 1928. Pp. 94. Fr.16.

Commission of the League of Nations (see THE LANCET, 1928, i., 664) in the right selection of a leader, giving time for his schemes to fructify in special research into local conditions, and in the application of those means of prevention which that research suggests as being the most promising for that locality.

NITROUS OXIDE AS A SUPPORTER OF COMBUSTION.

THE power of nitrous oxide to support combustion is often ignored, if indeed it is known at all. A suggestion was recently made in our own columns, for instance, that the gas might on emergency be used instead of compressed air to avoid the possible risk of concentrated oxygen when liquid paraffin is employed for lubrication. Yet the fact is that nitrous oxide contains double the proportion of oxygen present in atmospheric air and in a form which is readily available for combustion. The idea seems still to survive that nitrous oxide is inert, much in the sense that nitrogen itself is inert, although Hewitt states in his text-book, "When a burning body is placed in the gas the latter is decomposed and combustion is supported." The risk may be put a little more strongly than that. Prof. H. H. Dixon has shown[1] that in some combinations nitrous oxide helps to form an explosive mixture more readily than does oxygen itself. Testing ethylene and propylene mixed with air, oxygen, or nitrous oxide, Dixon found that the ignition points were actually lower with nitrous oxide than with oxygen. Nowadays when mixtures of ether or ethylene with nitrous oxide are so frequently employed for general anæsthesia, it should not be forgotten how readily nitrous oxide provides material for explosion under favourable conditions of temperature and pressure.

HISTOLOGY AND PROGNOSIS IN CANCER.

OF late years a good deal of attention has been paid to the relationship between the histological character of a malignant growth and the prognosis following radical operation. For example, D. H. Patey and R. W. Scarff[2] divide 50 cases of cancer of the breast, operated upon five or more years ago, into three histological types, and on analysing the ultimate results find, as might be expected, that the prognosis in the less malignant types is very much more favourable than in the others. They also note that there is a preponderance of the more benign types of growth in the early cases, showing that the favourable stage lasts longer in cases of this type. A parallel investigation of carcinoma of the cervix treated by radium at the Memorial Hospital, New York, has been described by W. P. Healy.[3] He has taken for investigation a block of 200 cases treated in 1922 and 1923, and he, too, divides his cases into three groups, which he calls the adult, the plexiform, and the anaplastic. During the period under review 25 advanced cases of the adult or least malignant group were treated, and only one of these patients was well after four and five years (4 per cent.). In the anaplastic or most malignant group there were 14 survivals out of 33 cases treated (42 per cent.). This is in striking contrast both to Patey and Scarff's results with the operative treatment of carcinoma of the breast, and with other studies on the operative treatment of carcinoma of the cervix, which all show that the best results are obtained when the growth is of the adult type. Thus at the Johns Hopkins Hospital 47 per cent. of cases of the adult type survived and only 9·5 per cent. of the anaplastic type. The figures from the Mayo Clinic are similar—namely, 53 and 9·5 per cent. Healy finds that in operable cases the prognosis for cases treated by radium varies little with the histological characteristics. If his findings with the inoperable cases truly represent the response of particular types of growth to irradiation, this lack of differentiation can probably be explained by the early lymphatic spread of more rapidly growing types of growth. When compared with the results of operation his figures are still very striking, and, on the whole, it is evident that the factors which influence prognosis are quite different in the two main methods of treating cancer. Whereas with surgery the outlook is better the more stable the type of growth, with irradiation it is the unstable, atypical, and more rapidly growing neoplasm which reacts to treatment.

[1] THE LANCET, 1927, i., 247.
[2] Ibid, 1928, i., 801.
[3] Amer. Jour. of Obst. and Gyn., 1928, xvi.

THE INDIAN MEDICAL YEAR.

YEAR by year Lieut.-Colonel R. Knowles, I.M.S., of the Calcutta School of Tropical Medicine, with the assistance of collaborators in various provinces, edits a review of medicine, surgery, and public health in India, which is published as a supplement to the *Indian Medical Gazette*. The 1927 review contains 48 pages, of which the greater part is devoted to questions of public health and research. It may be assumed that the comparative neglect of clinical medicine is not the editor's fault, but is due to the fact that practising physicians and surgeons in India are busy men who do not readily commit their work to writing. The period under review includes the meetings of the Congress of the Far Eastern Association of Tropical Medicine in Calcutta which added so greatly to the interest of the year. Sir Ronald Ross's tour in Malaya and Assam afforded a much-needed stimulus to antimalarial work. The fact that it is the commercial interests that are setting the lead to-day in the control of malaria lends point to Sir Ronald's contention that a large-scale official campaign would soon justify the necessary outlay. The situation is not without its humorous side, for at the Presidency General Hospital in Calcutta, where much of his work was done, both he and the guests assembled in his honour were ferociously attacked by mosquitoes. In spite, however, of slow progress in some directions, a serious effort is really being made in many places to cope with malaria, and the necessary knowledge is being steadily accumulated. A malaria survey of the tea gardens of Assam has been completed, and much labour is being wisely expended in studying the anopheline mosquitoes, particularly with regard to their habits and environment.

At the Haffkine Institute in Bombay efforts are being directed towards producing a potent serum for the treatment of plague and improving the present prophylactic vaccine. Cholera has also received much attention from various observers, one of whom claims to have established that non-agglutinable can be transformed into agglutinable vibrios under suitable conditions. If this supposition is proved to be correct it may profoundly alter our ideas of immunity in this disease, both during an epidemic and at subsequent reinfections. The old controversy between the supporters of the hypertonic and isotonic saline injection methods of treatment for cholera has again cropped up, and it seems clear that there is a considerable body of clinicians who favour the use of isotonic fluid, combined with adrenalin. The prophylactic value of inoculation on a large scale, in order to lessen the number of carriers, seems to have been proved in Java, and this would certainly deserve attention in India were it not for the religious and other prejudices which stand in the way of compulsory measures of the kind. In dysentery there has been no marked advance to record, unless the claims of d'Herelle with regard to his bacteriophage treatment are supported by further experience. Bacteriophage may also prove a potent remedy for cholera if the hopes of the discoverer are realised. Kala-azar is perhaps the brightest spot in tropical medicine during this period. Both diagnosis and treatment have been revolutionised. The reports on leprosy are encouraging, and it is stated that the results of recent methods of treatment justify the belief that we are now dealing with a curable disease, especially if taken at an early stage. Further work which has been done on epidemic

dropsy appears to point to the rice bacillus, and poisons generated by it in the damaged grain, as the causative agent, but this theory is not yet generally accepted.

The review gives a large amount of detailed information on public health work in the various provinces; the appalling conditions which exist, not only in the smaller communities but also in many considerable towns and cities, are at last attracting more attention. Interest in child welfare and the training of dais or native midwives is extending rapidly, and India is evidently awaking to the facts of maternal and infant mortality, though the process of prevention must be slow. Amongst recent public health advances should be mentioned the campaign against hookworm which is being carried on in the tea and rubber districts of the Southern Presidency. It is stated that round-worm infestation is probably of equal or even greater importance in India. In the sphere of medical education the most important event of the year was the second tour of inspection of the principal medical schools by Sir Norman Walker on behalf of the General Medical Council. His friendly if sometimes trenchant criticisms have already borne good fruit.

THE CAUSE OF POMPHOLYX.

WHEN Tilbury Fox first described vesicular eruption in the finger-webs as a clinical entity he regarded it as a retention disorder of the sweat glands. This view has been conclusively disproved, but the name dysidrosis has not been discarded, although pompholyx (blister) is less misleading. The ætiology of these common affections is still in dispute, and there is some evidence that they are increasing in frequency. The Japanese have always held that most if not all, vesicular disorders of this kind on the extremities are due to a mycosis, and the evidence brought forward by Y. Taniguchi [1] for pompholyx of the feet goes far to support this contention, which is also upheld by Jean Darier,[2] who says that a fungus can be recovered in no less than 80 per cent. "des cas presentant l'aspect de la dysidrose." Taniguchi does not concern himself in this study with the palmar cases, which he admits need further investigation, but in the 50 cases of plantar pompholyx examined he never once failed to recover fungi which in their cultural features closely resemble the group described by Sabouraud as *Trichophyton radiolatum*. He did not content himself with histological demonstration and cultural recovery of the pure mycelium; he went a step further and inoculated it into five persons who submitted the skin of their feet to the experiment, and he succeeded in accurately reproducing the typical clinical manifestations of itching and vesiculation, the organism being again recovered in each case. He claims that as far as the feet are concerned his experiments seem to rule out the existence of an "idiopathic dysidrosis." He evidently believes that the same conclusion will eventually be reached as regards the hands, and points out that *Epidermophyton inguinale* was isolated in five out of 13 cases of interdigital eczema examined in the course of his experiments.

THE TECHNIQUE OF PROSTATECTOMY.

JUDGING from reports [3] of the fortieth annual meeting of the American Association of Genito-Urinary Surgeons the ideal technique of prostatectomy seems to be as much in doubt on the other side of the Atlantic as it is here. Not only are urologists divided into two fairly distinct schools, according to their preference for the perineal and the suprapubic route, but within these schools there are many different opinions as to how the operation should be done. Especially noticeable were these differences of opinion in the discussions on post-operative hæmorrhage, which showed that there are those who pin their faith to suture as a means of dealing with bleeding, and an equally large number who rely on packing or on some form of hæmostatic bag. W. E. Lower, who belongs to the suture school, is so confident of his methods that he is prepared as a rule to dispense with drainage and to close the bladder. C. H. Chetwood, who follows Lower's method of suture, has not gone so far as this and uses a small drainage-tube. Greater unanimity was shown on the subject of local anæsthesia. Edwin Davis reports 176 consecutive cases of perineal prostatectomy operated on under sacral anæsthesia, with excellent results. H. G. Hamer, on the other hand, prefers local anæsthesia. He is a partisan of the suprapubic route, approaching the bladder through a medial incision previously infiltrated from the pubes to the umbilicus with Schlesich's solution. In the discussion on Davis's paper, Hugh Young raised the objection that sacral anæsthesia is difficult to induce, requires special training, and is liable to consume a great deal of time. He himself had found that caudal anæsthesia was usually sufficient and that it was unnecessary to make the lateral injections into the nerves as they emerged from the canals in the sacrum in order to get excellent anæsthesia for perineal prostatectomy. At first, he said, he had employed 50 c.cm. of a 1 per cent. solution, but with this technique there had often been a rapid and pronounced drop in blood pressure owing to the drug penetrating to the dorsal region. He had, therefore, substituted a 3 per cent. solution of which he injected only 20 c.cm. With this technique an equally satisfactory anæsthesia was obtained without the drop in blood pressure. In only 5 to 8 per cent. of cases had it been necessary to supplement this with a small amount of gas and oxygen.

THE EARLY VICISSITUDES OF QUININE

FEW remedies are in such universal demand as quinine, and few have passed through such difficult times before their value became established. The drug must have been used by natives from time immemorial, and there are many traditions of its origin. An unlikely one is that an earthquake precipitated some trees into a pool, where they rotted and infused the water with their bitter essence; a fever-stricken Indian chancing to drink the water was miraculously cured. This may have happened, but even if the Indian had connected his experience with the trees—a feat quite beyond most minds at his stage of development—it would have taken the tribe hundreds of years to improve on the method of throwing trees into a lake to rot, and the story goes that the use of the crushed bark sprang into prompt acceptance. Another suggestion is that the natives imitate the local carnivora, which are said to gnaw the bark of the tree when they feel ill, somewhat as dogs eat grass. Dr. S. Abbatucci,[1] summarising a recent lecture by Dr. Alessandro Canezza, director of the Lancisian Library at Rome, agrees with the legend that the first person to import quinine into Europe was the Countess de Chinchon, wife of the Spanish Viceroy of Peru. This seems a more probable derivation than the alleged Inca expression "china-china" (food), suggested by one authority. The Jesuit missionaries, who had known it for some time, treated her with it for malaria, and she was so impressed that when she and her husband went back to Spain in 1639 they took a supply with them and distributed it broadcast under the name of Jesuit's powder. A few years later a superior of the Order of St. Ignatius de Loyola, Father Bartholomew Tafur, employed it with success on Louis XIV. when he was Dauphin, and its renown spread into Belgium and England. In this country, however, where Protestant fervour was at boiling-point, the drug was anathematised as an invention of the Devil. Lively controversy about its value soon took place on the Continent. The Governor of Belgium, Leopold

[1] Jap. Jour. Med. Sci., 1927, i., 43.
[2] Text-book of Dermatology, Philadelphia, 1920, p. 85.
[3] Trans. Amer. Assoc. Gen.-Ur. Surg., 1928, xxi.

[1] Revue de Méd., 1928, No. 4, 563.

William of Austria, had been treated with quinine for a tertian fever; he had a relapse and his physician, Chifflet, advised him not to continue the treatment. The ingenious Chifflet held the new remedy responsible for his death, and inveighed against its uncertainty and dangers in a pamphlet. H. Fabri, director of the penitentiary of St. Peter at Rome, replied, after the manner of the age, at great length and with some acerbity. Others took up this leisurely duel, which lasted long after Chifflet's death in 1671 had spared him the mortification of seeing the success of quinine. One of its most ardent supporters during this warfare was the Cardinal of Lugo, whose energetic championship gave it the alternative name of Cardinal's powder. The Roman College of Jesuits which, like most religious houses of note, had its own dispensary, was the chief centre of distribution for the drug. In the sanctuary of the Hospital of the Holy Ghost there appears a series of artistic frescoes in which the Cardinal is depicted as distributing quinine to the sick, the Count of Chinchon as receiving it from the Indians, and his lady as taking a therapeutic draught of it. The progress of quinine was hampered by numberless imitations, for it was quite easy to sell large quantities of any root such as valerian, crushed and flavoured with aloes, under the name of cinchona bark. Nevertheless, like most good things, it triumphed in the end, and its struggles have been almost completely forgotten, for few medical men, except those especially concerned with the history of medicine, have ever heard of pulvis patrum, remedium anglicum, or Jesuit's powder.

THE LATE CONSTANTINOPLE BOARD OF HEALTH.

THE internationalisation of preventive medicine has made remarkably rapid progress in the last two decades. The first impetus was given to the process by the establishment, as the result of the Rome Arrangement of 1907, of the International Health Office, with seat in Paris. This was followed, some 12 years later, by the creation of the Health Organisation of the League of Nations, which, while leaving the powers and functions of the Paris Office largely untouched, absorbed it into itself, as the General Advisory Health Council of the League. With these bodies the future of the international control of disease mainly lies. In the past, before this process of centralisation had been carried out, such international control was more or less limited, geographically and otherwise, to the efforts of the four International Boards of Health to prevent the infection of cholera, plague, and other diseases from invading Europe from the Eastern countries, where they are more or less constantly present. Those Boards—of Alexandria, Tehran, Tangier, and Constantinople—came into being at different dates in the last century; their existence was recognised and their mandates more or less clearly defined by the successive International Sanitary Conferences—from the first one in 1851 down to the latest, that of 1926. The Alexandria Board continues to function, and now plays the principal part in maintaining the sanitary barrier between the East and Europe; its powers were considerably enhanced and extended by the International Sanitary Convention of 1926. The Tehran Board also continues to exist; its powers and its mandate have always been more limited than those of the Alexandria or the Constantinople Boards, as readers of THE LANCET will have gathered from the interesting articles from the pen of Dr. A. R. Neligan, the British delegate to the Board, which appeared in our columns in 1926. The Tangier Board has never possessed the importance or powers of the other three Boards; as a result of recent political changes in Morocco the area of its labours is now limited to the small internationalised zone of Tangier and the immediately adjoining territory. Finally, the Constantinople Board has ceased to exist, and a purely Turkish administration is now charged with the sanitary defences of the greatly diminished Turkish coasts and frontiers. In 1923 we published a series of articles relating the history of that Board, written by Dr. F. G. Clemow, who was for so many years the British delegate to that body. To-day we publish a "Supplementary Note" by the same author, throwing further light on the origin of the Board and on many points connected with its history. It should be counted to the Turks for righteousness that, years before the Constantinople Board existed, they themselves conceived the grandiose scheme of a great lazaret on the Bosphorus, with a central sanitary board and health offices in the principal Turkish ports; and that, as far back as 1837, they put forward proposals that clearly foreshadowed the modern practice of "surveillance"—as distinct from "observation"—as a defensive measure against the spread of plague. Though admittedly a "footnote to history," the article, as such "footnotes" frequently are, is illuminating on many matters of interest, from the extraordinary fanaticism of certain races in the presence of disease to the process, only briefly mentioned, of liquidating a long-established and complex body like the Constantinople Board of Health and the organisation it administered.

EXTIRPATION OF THE GALL-BLADDER.

A STUDY of the literature of surgical treatment of gall-stones reveals a difference of opinion between those who regard cholecystectomy as an operation of unconditional choice and those who defend the efficacy of cholecystotomy. Direct investigations intended to define the intimate function of the gall-bladder seem to have been somewhat neglected so that we have no exact criteria of the effect of its ablation, many surgeons speaking of cholecystectomy as they would of an operation to remove a useless appendix. Such a view is opposed by Prof. G. Balice,[1] of the University of Naples, who is convinced that the gall-bladder has a physiological importance far beyond that of a mere receptacle or reservoir, though he admits that its extirpation is not harmful to the organic economy except indirectly and by the possible consequences of an exuberance of intestinal flora due to an absence of inhibition by the cystic bile. Some authorities, he says, think it necessary to take away the gall-bladder to prevent the formation of calculi, but this theory must be accepted with reserve since calculosis has been observed after cholecystectomy with or without reformation of a biliary vesicle from the stump of the cystic duct—not to mention those cases in which there is calculosis of the bile-ducts with congenital absence of the gall-bladder. He considers it justifiable to extirpate the gall-bladder to avoid the dangers of a subsequent cholecystitis, but maintains that such intervention cannot be justified on the mere suspicion, for instance, that typhoid bacilli are lodged there. Mayo Robson is quoted as holding that cholecystectomy is unnecessary in ordinary cholelithiasis when the gall-bladder is not seriously damaged and the cystic duct neither ulcerated nor constricted: Robson's statistics in 1917 showed 53 per cent. of complete recoveries after cystotomy and 71 per cent. after cystectomy. Some surgeons, Prof. Balice continues, have always been in favour of cholecystotomy, and Harris Brownlee maintains that the gall-bladder acts as a safety-valve for the liver, and cites cases in which recovery was impossible as it was found to be atrophied and empty. From his study of reported cases of operation on the biliary passages Balice has come to the conclusion that more attention has been paid to the anatomical and surgical problem than to estimating the physiological importance of the organ extirpated, and that researches have been directed more to attaining surgical perfection in the different modes of intervention than to estimating the disequilibrium caused by loss of the gall-bladder. Whilst agreeing that it should be

[1] Policlinico (Surgical Section), Nov. 15th, 1928.

removed whenever there is reason to fear that its presence would entail worse evils, he believes that it should otherwise be preserved. It is only by such action, he remarks, that the surgeon will show that beyond a passion for operation he has a scientific culture which guides him in interpreting the phenomena he is called upon to treat.

Considerable sympathy will be felt with Prof. Balice's views; at the same time we have clinical evidence from thousands of cases that cholecystectomy is very often harmless—that human beings can get on well without a gall-bladder. There is also evidence that a compensatory mechanism is set up after cholecystectomy. Beale in 1889 first described small parietal saccules, in the walls of the bile-ducts, which apparently have a similar function to the gall-bladder. These saccules are strongly developed in animals, such as the horse, in whom this organ is absent, and in his Mütter lecture to the Royal College of Physicians at Philadelphia in 1923 J. E. Sweet described how, after cholecystectomy in dogs, the parietal saccules grow out and branch and seem to take on the function of the gall-bladder which has been removed.

THE INDUSTRIAL HEALTH EDUCATION SOCIETY.

A MEMORANDUM has been circulated by this Society setting out its objects and affirming the need for health propaganda among workers, both in order to mitigate sickness and disease of an occupational nature and to instil sound teaching on matters of health generally. The need for such health propaganda was shown in a recent report of Sir George Newman, wherein it was stated that in 1927 30½ million weeks' work was lost through sickness and disablement among insured workers alone, while £30,000,000 was spent in sickness benefit and medical treatment among these same persons. For three years the Society, getting the services of doctors free, was able to organise health-talks of pertinent interest to every class of worker; but the fees and out-of-pocket expenses and the supplying of medical literature, often costly, in order that the lecturers might speak from the latest information has depleted the available funds, and this at a time when success has stimulated the Society to extend its operations. In 1927 the income was £2254, while it is now estimated that if the large and growing demands for the services offered are to be met the annual expenditure will have to be at least £5000. A confident eye, however, is turned towards the various employers' organisations, individual firms, and trades-unions for generous support. All will agree with the Society in feeling that the healthier the workers are the better will production be, with benefit alike to employers and employed, so that the Industrial Health Education Society has no difficulty in making out a strong claim for support. The hon. President of the Society is Sir Humphry Rolleston, the general secretary Mr. James Mackenzie, and the address 84, Kingsway, W.C.

Lady Singer has given £500 to the Royal Society of Medicine in memory of the late Sir David Ferrier, F.R.S., with whose work she was associated for some years. The money is to be invested and the income used for the purchase of neurological works for the library. Each book so purchased will bear a memorial bookplate.

Prof. J. H. Zaaijer, of the University of Leyden, will deliver the Hunterian lecture of the Hunterian Society at 9 P.M. on Monday next at the Mansion House, London. His subject will be the Surgery of the Œsophagus and Lungs. It is announced that the Society's annual dinner will be held on Thursday, Feb. 14th, at the May Fair Hotel, Berkeley-square, W.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XVIII.—THE INTERPRETATION OF THE WASSERMANN REACTION IN CHILDREN.

Taking of the Blood from Children for the Test.

IF the Wassermann reaction alone is to be tested 1 c.cm. or even less of blood will suffice, but if it be thought desirable to carry out in addition any of the "flocculation" tests, which will be referred to later, 3 or 5 c.cm. of blood will be necessary. Although in hospital practice and to a skilled pathologist with adequate assistance the taking of blood, even from the youngest infant, rarely presents any difficulty, it is usually inadvisable for various reasons for the practitioner to take the blood himself; it is wiser to allow a pathologist to do so.

The first essential is to have a good syringe, and this should be an all-glass syringe and not a "Record" glass and metal syringe, for with the latter the piston is apt to move stiffly. For many years I have used the three-piece all-glass "Agla" syringes made by Burroughs Wellcome and Co., which are very smooth in action. A 1 c.cm., 3 c.cm., or 5 c.cm. syringe may be used according to the amount of blood required, which is best obtained by vein puncture. From infants under 12 months in whom the anterior fontanelle is still open, the blood can be obtained quite easily from the longitudinal sinus by puncturing the fontanelle at its posterior angle. I have obtained blood from infants in this manner many hundreds of times, usually without any difficulty (except in cases of marked hydrocephalus when the landmarks are apt to be wanting), and with no ill-effects to the patients, and once the initial diffidence has been overcome this method of obtaining blood from infants will always be adopted. Other veins which are also selected for puncture are the anterior cubital vein, such as is used in adults, the external jugular vein, and one of the scalp veins. If no syringe is available, or if for any reason it be thought undesirable to puncture a vein, sufficient blood for the Wassermann test (½-1 c.cm.) may sometimes be obtained by puncturing the heel, big toe, or possibly the thumb or ear with a needle or glass pricker, but personally I never use or recommend this method, as it is more irksome to the patient, takes longer, and very often fails. The syringe used should either be dry sterilised or have been boiled in water and then washed through with normal saline, by aspirating this through the needle and then emptying the syringe. On no account should ether, alcohol, or methylated spirit or other antiseptic be present in the needle or syringe, because the admixture of any of these with the blood spoils the blood for the test. If the syringe, after having been boiled, is not washed out with saline, the small amount of water left in the syringe leads to hæmolysis of the blood. When the requisite amount of blood has been obtained in the syringe the needle is withdrawn and a small pad of gauze or cotton-wool held on the puncture hole by the assistant, while the blood is pushed out into the tube in which it is to be sent to the pathologist. The blood should not be allowed to remain any appreciable time in the syringe; otherwise it may begin to clot and the piston will stick.

For practical and working purposes we may take it that, in this country and elsewhere outside the tropics, a *strongly positive* Wassermann reaction indicates syphilis. On the other hand, a negative Wassermann reaction does not necessarily contra-indicate syphilis, though it may be correct in 90 per cent. of the cases.

Technique.

Without going into details of technique, we may recall the fact that some sera in the appropriate dilution, and in the presence of the appropriate antigen, are able to "fix" three minimal hæmolytic doses or units of complement; others can fix 5 units and are then said to have a stronger W.R. than the former; others, again, may fix the 5 units of complement with only half, one-quarter, one-eighth, or even less of the standard quantity of serum; such sera

would be regarded as having progressively stronger Wassermann reactions. The "indicator" which is used to show the presence or absence of unfixed complement is called a "hæmolytic system," and consists of a standard mixture of an emulsion of sheep's red cells and sheep's-cell hæmolytic serum, which has been heated to destroy its natural complement.

After preliminary titration of all the reagents, the first stage of the actual test consists of mixing together definite amounts of: (1) the patient's serum, previously heated to destroy its natural complement; (2) dilution of antigen extract, and (3) complement in guinea-pig's serum (3 and/or 5 units). The whole is made up to a definite volume and kept for half an hour at room temperature and then for half an hour in the water-bath at 37·5° C.

In the second stage equal volumes of the "hæmolytic system" are added to every tube, and after vigorous shaking the whole is incubated at 37·5° and examined after 5, 10, and 15 minutes, and read at the end of half an hour. If the corpuscles are completely dissolved and hæmolysed it is because the complement at the end of stage 1 has been free and not mixed, and such a reaction is called a (clear) negative. If the corpuscles are not completely dissolved after the water-bath the tubes should be kept overnight in the ice-chest to allow the corpuscles to subside and the next morning the reaction can be read off and the relative amount of residual corpuscles estimated.

The Report.

If the supernatant liquid is quite colourless it is obvious that none of the sheep's cells has been dissolved; in others words, the whole of the complement added in stage 1 has been fixed and the reaction is called a positive one, expressing the complete absence of hæmolysis by the figure 4. If half the corpuscles are hæmolysed the figure 2 is used, if less than half the figure 3, and if more than half the figure 1, so that for any one tube of the test one of the figures 4, 3, 2, 1, or 0 could be used to represent the result of the test in that tube.

In cases which are likely to be syphilitic, as well as in those which are known to be syphilitic and are undergoing treatment, it is advisable to use two different strengths of serum and also 3 and 5 units of complement for the Wassermann test. If such a serum were very strongly positive there would be no hæmolysis in any of the test-tubes and the result would be expressed by the figures 4, 4, 4, 4; if the blood were less strongly positive and there was complete hæmolysis with the smaller volume of serum (1 in 30 dilution) and 5 units of complement the reading of the result would be 4, 4, 4, 0.* A blood giving a reading of, say, 3, 2, 1, 1 would be regarded as a weak or partial positive.

Other Methods of Reporting on the Wassermann Reaction.

The method of reporting on the Wassermann reaction which has just been described is one which I have used for many years and which is also adopted by some other pathologists. It must be pointed out, however, that some years ago the Ministry of Health suggested a somewhat different notation for Wassermann reports, the symbols recommended being ++, +, ±, and −.

Thus ++ signifies a strongly positive Wassermann reaction, or a sigma test (vide infra), giving more than 3·9 units in 20 hours. This corresponds to the ++++ of some pathologists and to my 4, 4, 4, 4; + means a positive Wassermann reaction with fixation of the standard amount of complement, or a sigma test giving 1·5 to 3·9 units in 20 hours. This corresponds to the ++ of some pathologists and to my 4, 4, 0, 0; ± means a doubtful Wassermann reaction, with some hæmolysis in the standard tube, or a sigma test giving 1 to 1·4 units in 20 hours. Some pathologists would express this as ± ±, and with my notation it would be 2, 1, 0, 0; − signifies a negative Wassermann reaction or a sigma test giving less than 1 unit in 20 hours.

Formerly practically every pathologist had his own method of performing the Wassermann test, though the underlying principles were the same in most methods. In a test requiring the use of so many reagents of a "biological" nature, it followed that unless a more or less standardised method of titrating the reagents were employed, and further, that such standardised reagents were used in a prescribed manner, the results obtained by different pathologists would hardly be comparable. In consequence, the subject of the technique of the Wassermann reaction was fully considered by a Committee of the Medical Research Council some years ago with the result that four approved methods of performing the test were decided upon, and one or other of these methods is now used in most laboratories in this country. Even so, and using the greatest care in standardising the reagents and in carrying out the test and controls, an experienced worker may find that one week the results may tend to come out rather on the positive side, another week rather on the negative side. This is hardly to be wondered at in view of the complicated nature of the reagents employed and the fact that the actual mechanism of interaction of these reagents is so little understood.

The Sigma and Kahn Reactions.

It was on account of these admittedly inherent and unexplained difficulties in the actual performance of the Wassermann tests that simpler tests for the detection of syphilis were sought and elaborated. As a result (1) the "flocculation" test of Sachs-Georgi, modified by Dreyer and Ward and called by them the "sigma" reaction; (2) the Kahn; (3) the Meinicke; and (4) the Vernes flocculation or precipitation tests were introduced. The principle underlying all these tests is the addition of a specially prepared antigen to the patient's serum; in the case of a syphilitic serum a coarse flocculation or precipitate is produced, whereas in a normal serum no such phenomenon is observed. The advantages of these tests are: (1) that only one reagent, the antigen, is required; (2) the test is easily carried out; (3) the results are quantitative; and (4) in treated cases these tests are more sensitive than the Wassermann reaction, for they may remain positive long after the Wassermann reaction has become negative, which may be an indication that further treatment of the patient is desirable to prevent a relapse.

In reporting upon the "sigma" reaction any result above 1·5 units at 20–22 hours is regarded as positive; 1·0 to 1·5 units at 20–22 hours is regarded as positive in known cases of syphilis; less than 1·0 unit at 20–22 hours is regarded as negative, but the incubation is continued 40–44 hours, and if more than 1 unit at the end of that period is regarded as positive in known cases of syphilis only.

The Significance of a Positive Reaction in Children.

In children, as in adults, the Wassermann reaction may be strongly positive (4, 4, 4, 4), positive (4, 3, 1, 0), weakly positive (3, 2, 1, 0), or negative (0, 0, 0, 0), and it will be advisable to consider the significance of these results at different age-periods. A strongly positive or positive Wassermann reaction in a child of any age indicates syphilis and the necessity for treatment, with the possible exception of an apparently healthy new-born child or an infant a few weeks old, whose syphilitic mother has a positive Wassermann reaction. It is stated by some authorities that the Wassermann substance may pass from mother to child so that the latter reacts positively for some weeks, and that afterwards if the child is healthy the reaction becomes and remains negative. Other authorities maintain that the Wassermann substance is unable to traverse the placenta and that a positive reaction in a child is an indication of a syphilitic infection in the child. Of course, if an infant at birth or shortly afterwards has snuffles or a rash, particularly of a vesicular or bullous character, and if its Wassermann reaction is positive, it certainly has syphilis and should be treated accordingly. It is advisable to obtain confirmatory

* I have elsewhere (THE LANCET, 1927, ii., 692; Brit. Jour. of Venereal Dis.) described in detail my nomenclature for reporting on the Wassermann reaction in blood and cerebro-spinal fluid.

evidence by examining the mother's blood, and—unless the infection is of long standing in the mother—one usually finds that her reaction is also positive.

When the children in a family in which a frank case of inherited syphilis has been detected are systematically examined one or more may be found with a positive Wassermann reaction, but with no symptoms or signs, except perhaps suggestive teeth. Such cases are to be regarded as latent inherited syphilitics and most, if not all, syphilologists recommend treatment to guard against the possibility of later manifestations of the inherited disease. My own practice for several years has been to treat these children with injections of arsenicals and with mercury iodide or bismuth preparations until the Wassermann reaction becomes negative and remains so. Hitherto I have not seen such a case relapse or develop signs of syphilis.

A Negative Wassermann Reaction.

A negative Wassermann reaction is not conclusive evidence against syphilis, though a repeated negative is probably correct in 90 per cent. of cases. It is well known, of course, that infants who are found to have obvious signs of inherited syphilis at the age of 2 or 3 months may have been quite healthy at birth and for weeks afterwards. If the blood is tested during the earlier weeks of life—that is, while the disease is incubating—the Wassermann reaction may be found negative, though at the age of 2, 3, or 4 months it may be positive. Cases, however, have been recorded in which the Wassermann reaction was negative, yet the child had obvious symptoms of inherited syphilis. Confirmatory evidence in such cases may be obtained from the examination of the mother's blood. For many years I have made it a practice to test the mother of every suspected child under 1 year, though it should be remembered that if the mother is again pregnant a positive Wassermann reaction may become temporarily negative, and the result therefore unreliable. If an infant has obvious clinical syphilis it should be treated for the disease *even though its Wassermann reaction is negative*, and the blood should be tested frequently, for the treatment may for a time provoke a positive reaction (the so-called Herxheimer reaction). Another point which should be borne in mind is that the Wassermann reaction may fluctuate—certainly in treated and probably in untreated cases—so that at one examination it may be negative and when repeated a month or two later it may be strongly positive. Blood tests in doubtful cases should be repeated at intervals of one and two months.

In older children and in young adolescents in whom the infection may be only slight or who may have had mild infantile symptoms and then no sign of the disease for many years the Wassermann reaction may be negative. In such cases the Kahn or other flocculation test may be found positive, and when the patient has been treated or given a "provocative" injection of "914" the Wassermann reaction may become positive.

Weakly Positive Reactions.

It is sometimes stated that in inherited syphilis the Wassermann reaction is nearly always strongly positive, so that a negative or weak reaction may be regarded as evidence against the disease. I believe that to be wrong and I never ignore a weakly positive reaction. In my opinion it is an indication for further investigation in various directions: (1) examination of the patient for signs of the disease; (2) a provocative injection of "914" followed by examination of the blood 2, 7, and 14 days afterwards for the Wassermann and Kahn reactions; (3) investigation of the patient's early history for possible infantile symptoms; (4) inquiries into the mother's obstetric history; and (5) examination of the mother's blood, also that of the patient's brothers and sisters and of their blood reactions. In these various ways I have several times been able to demonstrate that a patient with a weak Wassermann reaction was really syphilitic.

The Wassermann Reaction after Treatment.

In a chronic disease like syphilis it is very difficult to say when a cure has been effected. The disappearance of the symptoms and the general amelioration of the patient's physical condition are important signs of cure, but it may be several years after the cessation of active treatment before one can feel reasonably certain that the patient is cured. Interstitial keratitis is apparently the least amenable to treatment of all the manifestations of inherited syphilis, and I have seen it occur in children who were actually undergoing treatment and on one or two occasions in children who had had several courses of injections and whose Wassermann reaction had already become negative. We see therefore that a negative Wassermann reaction cannot be regarded as conclusive evidence of cure, though the aim of treatment is, in addition to ridding the patient of his syphilitic symptoms, to render the Wassermann reaction permanently negative. For several years I have done the Kahn test in addition to the Wassermann reaction on my treated syphilitic children, and the treatment is continued until the Kahn test as well as the Wassermann reaction is negative. As many as 40 or even 50 injections of arsenic may be required—and one usually finds it is the older children (5 to 10 years of age) who require the longer courses of treatment. As a rule they remain negative, but a small proportion of them relapse serologically, though their general health remains good. A certain proportion of cases—perhaps 10 per cent. of syphilitic children over 1 year of age—remain strongly Wassermann positive even after full courses of treatment, and these comprise cases of congenital neurosyphilis in which the Wassermann reaction in the spinal fluid is found to be strongly positive, cases of ulceration of the palate, nasopharynx, or larynx, and more rarely cases with periostitis or other manifestation of the inherited disease. The spinal fluid should always be examined in these cases with persistently positive Wassermann reactions, and if it too be found positive malaria therapy should be tried either alone or combined with intrathecal injections of salvarsanised serum, for, so long as the spinal fluid is positive, the possible development of general paralysis or other syphilitic cerebrospinal disease is not excluded. In the absence of evidence of disease in the central nervous system, and if the patient has had full courses of treatment with arsenic and bismuth and appears well, I have suspended further treatment, and have found that in some cases the Wassermann reaction some years afterwards has become less strongly positive or even negative.

What to Tell the Parents.

Having established the diagnosis of syphilis in mother and child it is in my opinion advisable to be frank with the mother and to tell her that the child is suffering from a "blood" disease which it has inherited from its parents and that a long course of treatment is necessary in the interest of the child's future health and well-being. If any apathy or even antagonism is manifested by the parents one can point out that the child is the innocent victim of disease in its forbears and that it is the duty of its parents to see that it receives proper treatment *at once*, as an insurance against possible future disablement. The parents should also be advised to undergo treatment to avoid the risk of a future breakdown in health which may render one or both of them unfit to provide for their children. I have come across at least a dozen families in which the syphilitic child has been the third generation to suffer from the disease, and from careful investigation in possible third generation cases I conclude that such instances may be more numerous than is generally believed. When a mother asks me how her child can have contracted the disease I tell her that it is quite possible for her to have inherited the disease herself and to have passed it on to her child; also, that the husband may be quite free from infection, and under the existing conditions he cannot be infected by his wife. Even

when I disclose the actual nature of the disease to the parents—as it is sometimes necessary to do to induce them to bring the child for treatment or to continue to do so, in case of their default—I have never had any domestic difficulties when I have explained how one or other parent may have inherited the disease from the child's grandparents and passed it on to the child.

In view of the fact that the treatment and subsequent supervision of the patient is likely to be very prolonged—extending, as it should, over many years—and that the parents' willing coöperation is necessary, one should always be conciliatory and sympathetic with the parents, yet sufficiently firm when they fail to bring the child for treatment to make them realise their responsibility for its present and future welfare.

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Special Articles.

THE LATE CONSTANTINOPLE BOARD OF HEALTH.

A SUPPLEMENTARY NOTE.

BY F. G. CLEMOW, C.M.G., M.D., D.P.H.,
FORMER BRITISH DELEGATE TO THE BOARD.

IN three earlier papers that appeared in the columns of THE LANCET in the summer of 1923[1] I gave a short account of the origin and history of the late Constantinople Board of Health. In the interval that has since elapsed further research into the surviving records of the time—notably the *procès verbaux* and other archives of the Board itself and the official correspondence relating to matters dealt with by the Board—has thrown much fresh light on the subject; and the new material thus acquired appears to be of such interest that I may perhaps be permitted to supplement those articles by some additional notes; to correct one erroneous statement; and to relate, quite briefly, how the affairs of the Board have been finally wound up and disposed of.

It was stated in the opening paper that, while 1839 had not infrequently been given as the date of the Board's coming into existence, some form of mixed Sanitary Council was unquestionably sitting in Constantinople at least as early as 1838, while the Turks themselves claim that, on the occasion of the great cholera epidemic of 1819, some kind of quarantine was applied to ships arriving in the Bosphorus, and that in 1836 a Turkish Quarantine Board, composed of three members, was already in existence. It has not proved possible to find positive confirmation of this latter statement, but it is quite possible that the Turkish claim is a just one, for already some years before that date there had been a moving of the waters in Turkey in the matter of protective quarantines. It was an era of great reforms in that country. The reigning Sultan, Mahmud II, had done more than any of his predecessors to abolish abuses, encourage progress, and introduce into a backward country the ways and methods of western civilisation. He had destroyed the Janissaries in 1826; he entirely reorganised the military and financial administrations; he suppressed those tyrannous local hereditary chiefs, known as the Deré Beys; and brought about many other reforms. And now he was desirous that Turkey, which was so specially liable to the ravages of plague and other pestilential diseases, should adopt those measures of protection that had long been practised by other and more advanced countries. His efforts to attain this end, however, met with no little opposition—both from his own people, whose fatalistic outlook on life could see in such measures nothing but a flouting of the Divine will, and from the foreign nations, who feared that those same measures, as applied in Turkey, would mean nothing but disastrous delays, cost and vexation for their shipping and commerce. But the Sultan was determined to overcome all such obstacles, and the successive steps in the process are of sufficient interest to be told in some detail.

As early as 1831 a request was addressed to the British Ambassador, asking him to procure "a plan of a lazaretto, to be established in Turkey, on European principles." Writing a few years later,[2] the Chaplain to the Embassy says:—

> "The next conquest over religious prejudices was taking precautions against the plague. They had carried conviction of its sinfulness to such an extent that, in the year 1812, when the disorder ravaged the city [of Constantinople], they would not suffer prayers to be offered up in the mosques to stay it, till 1000 persons were carried daily out of the Top Kapousi Gate to be buried, deeming even that a murmuring against Providence and a want of due submission to its decrees.[3] But after the late Russian campaign they began seriously to consider the absurdity of those opinions, and attend to the regulations enjoined by the Sultan. An energetic pasha, seeing the plague break out in his district, drew a cordon round a village where it was reigning, and suffered no one to pass in or out of it on any pretence. After some time everything was silent, and on examination it was found that the whole population was dead in their houses, but the disease never extended beyond the spot where this frightful precautionary sacrifice was made.
>
> "Availing himself of the impression which these and similar occurrences had made on the people, the Sultan caused application to be made to the British Minister at Constantinople for a plan of a lazaretto to be established in Turkey on European principles, with a view to prevent the introduction of the disease. This application was despatched to England, and orders were sent to Malta that a plan of the lazaretto of that place should be forwarded to the Turkish Government. This institution, however, was liable to many objections. It had been erected by the knights at a time when the island had no commerce, and when the thing was imperfectly understood, so it was determined to draw up a plan on the most improved system, in which all that was excellent should be embodied. The direction of the whole was given to Captain Schembri, a native of Malta, who had been particularly active and efficient when the plague had ravaged the island in 1813 and had continued to superintend the quarantine for 20 years since that period. With this intelligent man and on his benevolent mission I sailed," continues the Chaplain, "from Malta and we arrived at Pera on May 1st, 1831. His plan was submitted to the Sultan and highly approved of. It embraced the establishment of quarantine offices and lazarettos on the Dardanelles and Bosphorus, and all the towns on the coasts of Asia and Europe, with a board of health to organise a sanatory police, to watch the introduction and appearance of the disease, and take immediate precautions. The lazaret to be built for the capital is intended to be a noble edifice, 700 feet in length, in an airy and pleasant situation on the shores of the Bosphorus, and on such a plan that it will present to the view an elegant and cheerful abode, calculated rather to inspire pleasing thoughts than those dismal and depressing reflections, excited by other gloomy lazarettos, which, by sinking the mind, predispose the body to any complaint. The expense of the establishment is estimated at £20,000. When this is finished it will probably be the completest institution of the kind that ever was in the world, and it is not impossible that European nations may hereafter adopt this quarantine establishment of the Sultan for their model, and so take their plans for the future prevention of the plague from a people who for centuries obstinately persisted in allowing no precautions to be taken. The value of this important innovation will be appreciated, by considering that the European nations have drawn a vast cordon of perhaps 10,000 miles by sea and land round the Turkish Empire, forming a barrier through which no one is allowed immediately to pass, under penalty

[1] THE LANCET, 1923, i., 1074, 1126, and 1180.

[2] A Residence at Constantinople. By the Rev. R. Walsh, LL.D. London, 1836. Vol. II., Chap. XI.

[3] Such fatalism was not confined to Turks, nor to Moslems. Dr. Grassi, of Alexandria, wrote in 1839 of the "fanaticism of the Abyssinians (both Moslems and Christians)." They regarded the plague, he says, "as a beneficent emanation of the Divinity, which not only ought not to be avoided, but which every person ought to procure, and fix upon himself, as a means of salvation in a future state." And he relates how, when plague was raging in Jerusalem in 1838, a Copt caught the disease and died. There were 17 Coptic monks in that city—all "threw themselves with eagerness on the death-bed and clothed themselves in the garments of the defunct. All 17 perished."

of death; but when precautions similar to those of Europe are adopted in this country also, the Turks will no longer be an excluded people, but the intercourse will become as free as between one European nation and another, a great obstacle will thus be removed to their amalgamation with us, and they will no longer continue to be a distinct and separate people."

These grandiose conceptions, which even to-day can only be read with admiration, were destined to be but partially realised. The great lazaret on the Bosphorus, that was to be a model to other nations, remained a dream of Alnaschar. But the "board of health," the quarantine offices and lazarets around the coasts of Asiatic and European Turkey did in time come into existence. The Board of Health, indeed, was formed at the latest some seven years after these great reforms were foreshadowed, and, as was stated above, it is quite possible that some sort of board may have already existed, as the Turks claim, as early as 1836.

Early Projects for Quarantine.

A year earlier it would appear that, whether there was then any central quarantine authority or not, local authorities were already, on their own initiative, arranging to set up quarantine in their districts, with the agreement and coöperation of the foreign consular representatives. Thus, on Dec. 19th, 1835, the Governor of Prévesa, Saly Agha, came to an agreement with the British, French, and Greek consuls for the adoption of a set of quarantine regulations to be applied in that port. Under these rules a remarkable degree of power was given to the three consuls named. All ships of the nations they represented, coming from a plague-infected or plague-suspected place, were to submit to such precautions as might from time to time be decreed by the three consuls. Ships of any other Power were to put themselves either under the protection of one of the consuls or under the jurisdiction of the Customs authorities, who "shall be held to conform strictly to the orders" issued by the consuls. Penalties were to be imposed on persons breaking the rules, and the "Primate of Prévesa" was to nominate four health officers, "who shall be required, on entering upon their functions, to make oath for the due performance of the same." Their pay was the princely sum of six piastres (1*s.*) a day—this and their maintenance to be at the charge of the ship.

In like manner we find that, in September, 1837, the consuls of the chief European Powers at the Dardanelles were invited to meet the Pasha-Governor to discuss the best method of carrying out the desire of the Sublime Porte to establish quarantine in those straits. The proposals put forward by the Pasha, on instructions from the Porte, are of exceptional interest. They were not only remarkably reasonable for the time, but—apart from the quarantine, the duration of which does not appear from the surviving correspondence of the period—were in striking harmony with the principles of present-day practice and of the latest International Sanitary Conventions. Thus it was proposed to put a quarantine upon all ships arriving at the Dardanelles from any place where plague existed; boats were to be sent off to each ship as it arrived, "on the part of the Pasha, as chief of the Quarantine Department, to make inquiry respecting the health of the crew, the particulars of the voyage, and the nature of the cargo, and to demand, if necesary, the ship's papers; also *to note down the names of all the passengers, a list of whom is to be sent to Constantinople.*"[4]

It may reasonably be assumed that the object of this last regulation was to enable the Constantinople authorities to keep the passengers under some form of sanitary or medical supervision after their arrival in that city; and if that assumption is correct, it may be asserted that these Turkish proposals of 1837 clearly foreshadowed the modern practice of "surveillance" (as distinguished from "observation").[5] That practice was first prescribed in an International Sanitary Convention by that of Dresden, 1893, though it had been adopted in England some years before that date.

In spite of their reasonable character, however, the Turkish proposals met with opposition from some of the foreign consuls, and seem to have been dropped. For, writing in November, the British Ambassador in Constantinople states that so far nothing had been done by the Sublime Porte towards setting up the proposed quarantine, adding: "The Ottoman Commissioner who was sent there is dead and no regulations whatever have been made."

In another part of the Turkish realms—the Regency of Tripoli—quarantines and a local Board of Health were already in existence, it would seem, long before 1838. This is shown by a Note addressed by the foreign consuls in Tripoli to the Pasha Governor urging him to establish—

"a well-regulated and efficient quarantine and board of health, upon the same principles which so long existed here and which so effectually preserved the health of the Regency when it was confided to the direction of the Consular corps, with the concurrence of the chief authority of the Regency."[6]

Then, again, we find Prince Metternich, in Austria's reply to the French (unsuccessful) proposal to convoke an International Sanitary Conference in 1838, writing as follows:—

"For the last six years sanitary establishments have existed on the left bank of the Lower Danube, and these have entirely succeeded in preserving Wallachia and Moldavia from the invasion of plague."[7]

It is of interest also to note that the same authority in the same letter, wrote:—

"Lastly, Sultan Mahmoud, who is so disposed to enable the people subject to his sceptre to participate in the benefits of European civilisation, has not only recently manifested, by several publications, his firm determination to introduce quarantine into Turkey, but has even lately applied to us for several persons employed in our Quarantines (who were granted to him immediately)[8] in order that the Commission of Public Health instituted at Constantinople, assisted by their counsels, and by long experience, may be guided in the adoption of sanitary measures."

The "Commission of Public Health instituted at Constantinople" can scarcely have been other than the new Constantinople Board of Health, which was thus clearly in existence as early as 1838. Elsewhere, too, Turkish lazarets were already in being in that year, for on July 11th H.M. Consul in Salonika reported as follows:—

"A spacious building has been engaged for a lazaret for all persons and goods arriving by sea from infected ports, and other lazarets have been established for travellers and merchandise from the interior. Turkish Government tatars and couriers, arriving by steamboat from Constantinople and Smyrna, are put into quarantine, and the dispatches forwarded after fumigation, by other tatars from this."

In October, 1838, moreover, quarantine regulations were already being applied at Trebizond. The British Consul there reported that persons from the interior were subjected to three days' quarantine before being allowed to enter the town, and those who wished to embark on vessels had to do 15 days' quarantine in a lazaret. And in December of the same year a report was received from the British Consul in Candia

[4] Report of Mr. Lander, Consul at the Dardanelles, Sept. 4th, 1837. The italics are not in the original.

[5] The two terms were first clearly defined in a footnote to the Venice Convention of 1897—footnote which, with slight modifications, reappears in the Conventions of Paris (1903) and Paris (1912) in the following form: "The word *observation* signifies: isolation of passengers, either on board a ship or in a lazaret before they obtain free pratique." "The word *surveillance* signifies that the passengers are not isolated, that they obtain free pratique immediately, but they are followed up in the various places to which they are going and subjected there to a medical examination to determine their state of health." This medical visit is repeated daily as long as the "surveillance" lasts.

[6] Correspondence Relating to the Contagion of Plague and the Quarantine Regulations in Foreign Countries, 1836-43. Presented to the House of Commons, 1843.

[7] Ibid.

[8] Among these Austrian advisers was Dr. Minas, who had been head of the Quarantine establishment at Semlin, on the Danube. He arrived in Constantinople in July, 1838. (Proust: "La Défense de l'Euro e contre le Choléra.")

relating to certain proposed alterations in the quarantine law there—expression that implies that some form of quarantine regulations were already in existence.

I should like to take this opportunity to correct one statement that appeared in the earlier articles on this subject. It was there asserted that the Board

"was originally a local body, brought into existence to meet the immediate menace of a plague epidemic, and limiting its aims mainly, if not entirely, to the protection of the Turkish capital. It only later extended its work to the protection of the other ports and frontiers of the Turkish Empire and gradually assumed the many other responsibilities that fell to it during the later decades of its existence."

This, in the light of more recently acquired knowledge, is seen to be erroneous. From the very first the Board did not confine its work to the capital or its neighbourhood, but extended it to other, and far distant, ports and frontiers of the Turkish Empire. Moreover, as has just been shown, in some of the outlying portions of that empire quarantine regulations already existed and were applied even before the Board came into being.

The Constantinople Board of Health: Exterior.

Difficulties with the Sublime Porte.

Reference was made in the earlier articles to a critical moment in the Board's history, when its action met with the disapproval of the reigning Sultan, and

"the latter threatened to swamp it by the nomination of a large number of Turkish members, sufficient to outvote the foreign element on the Board—a threat analogous to that made a few years ago to a more august body in this country."

From the minutes of the Board the following additional details may be gathered. The incident occurred in the summer of 1884. Cholera was prevalent in France, and particularly in Marseilles. The Board had imposed a ten days' quarantine on arrivals in Turkey from French ports. An *iradé* was issued by the Sultan, demanding that some quarantine be also imposed against Varna and other Black Sea ports, on the grounds that passengers might come overland from France to those ports. The Board therefore imposed five days' quarantine and disinfection on arrivals from Varna, Kustenjé, the Danube ports, and Odessa. But even this was not deemed sufficient, and still severer measures were demanded; it would seem also that orders were given, behind the Board's back, to apply such severer measures by the customs and military authorities. The Board protested and refused to recognise these measures or to increase those it had already itself decreed. Thereupon, a fresh *iradé* was issued, nominating seven Turkish doctors as "honorary permanent members" of the Board; these were selected from the highest medical officers in the Turkish civil and military services. The foreign delegates, however, refused to sit with them, and the first and only meeting at which they were—not present, but waiting in rooms adjoining the council chamber—was brought hurriedly to a close. The Board did not meet again for a fortnight (it usually held weekly meetings), and in the interval the matter seems to have been smoothed over for a time and the seven additional members withdrawn.

But a month later, on Sept. 16th, the attack was renewed. The Board had decreed ten days' quarantine against Mediterranean ports and five days against Black Sea ports, on account of the very severe cholera epidemic then raging in Naples. The Porte was again dissatisfied, and the Council of Ministers decided that the Board should be required to discuss the question of increasing the measures jointly with the same seven "honorary members" as before. The decision was further sanctioned by an Imperial *iradé* to the same effect. Once more, however, the foreign delegates protested, and this time, as the minutes show, the Board held no meeting for three weeks; when it met again, the incident had apparently once more been smoothed over and the seven additional members again withdrawn.

The incident well illustrates what was one of the frequent difficulties with which the Board had to contend. When it had first been brought into being, some European Powers were apprehensive lest it should tend to apply over-long quarantines and other excessively restrictive measures, which, it was feared, would only hamper shipping and trade without offering compensating advantages from the public health point of view. These fears, however, had not been realised and, in the majority of instances, the Board's decisions were more or less moderate and in accordance with the professional views current at the time, and were only occasionally reactionary and inspired by the alarm of the moment. But for a great part of its existence, and especially during the long reign of Abdul Hamid, the tendency frequently manifested by the Board—and particularly by the foreign delegates—to rely rather upon modern sanitary measures than upon lengthy quarantines was constantly met by opposition or active interference from the Palace. *Irade* after *iradé* would be promulgated, demanding longer quarantines or stricter measures than the Board thought necessary to meet a given set of circumstances, and not infrequently a compromise would be arrived at, by the Board decreeing

measures somewhat more severe than those it had already imposed, but somewhat less severe than those demanded by the Palace. As a corollary to this state of affairs, the Board not infrequently decreed in the first instance more stringent measures than it would otherwise have done, in order to forestall Palace interference.

The Final Chapter.

The final chapter in the long history of the Board can be told quite briefly. A short section of the Treaty of Lausanne (1923) dealt with the matter. It was there formally recognised that the Board had ceased to exist as an international body, and the Turkish administration was charged with the sanitary defences of the coasts and frontiers of the greatly diminished Turkish State. It also provided, in the following article, that a Special Commission should meet in Constantinople, in order to liquidate completely all outstanding matters relating to the former organisation :—

Art. 116.—Turkey undertakes to respect to the full the rights of dismissed sanitary employees to an indemnity to be paid out of the funds of the ex-Superior Board of Health of Constantinople, and all other established rights of the employees and ex-employees of that Board and their heirs or representatives ("ayants droit"). All questions relating to those rights, to the destination to be given to the reserve funds of the ex-Superior Board of Health of Constantinople, to the definite liquidation of the former sanitary administration, as also any other similar or connected question, will be settled by a Commission *ad hoc*, composed of one representative of each of the Powers who formerly took part in the Superior Board of Health of Constantinople, with the exception of Germany, Austria, and Hungary. In case of disagreement among the members of this Commission on any question concerning either the above-named liquidation or the affectation of the residue of funds remaining after the liquidation, any Power represented on the Commission will have right to refer the matter to ("d'en saisir") the League of Nations, who will give the final decision.

Other clauses provided that one and the same sanitary tariff must be applied to Turkish and foreign shipping and nationals,[8] and dealt with some other minor matters.

The Liquidation Commission set up by the above article came together in Constantinople in February, 1925, and sat until June, 1926. Its task was one of considerable complexity, and was not rendered easier by the fact that large numbers of the persons to be liquidated were living in distant territories (such as Mesopotamia, Syria, Palestine, Arabia, and so forth) now detached from the former Turkish Empire, or were scattered in different countries of Europe, Africa, Asia, and even America. Its main tasks were to examine the large number (over 500) of claims and requests addressed to it either by former employees or by other persons not connected with the administration ; to compensate former officials and employees for the loss of their posts and the ruin of their careers ; to commute the pensions of sanitary pensioners ; and to dispose of the considerable reserve funds accumulated by the former Board in such a way as to satisfy, so far as might be, the often conflicting claims of the persons just named and those of the Turkish Government and present Turkish sanitary administration.

How far the Commission succeeded in satisfying either those claims or the claims of abstract justice will no doubt always be a matter of difference of opinion among the opposing claimants ; but, as British delegate and secretary-general to the Commission, I am in a position to assert that no effort was spared to arrive at a just and equitable distribution of the large funds that the Commission was called upon to administer, and that, in my opinion, the results arrived at did, on the whole, attain a very high level of justice and equity.

PS.—The accompanying illustration shows the exterior of the Constantinople Board of Health, as it was before the war, and as it still is. It continues to house the (purely Turkish) administration that now looks after the sanitary defences of the diminished Turkish State. The structure itself is of no great age, having been built—or rebuilt—some 30 to 35 years ago, when an earlier edifice had been badly damaged by a severe earthquake. Both buildings were erected over a curious underground, crypt-like structure, of considerable area, which has for long been used as a Moslem mosque. Its history is unknown, but it is believed to have existed from quite early times, possibly dating from the Byzantine era.

[8] The necessity of some such clause had been demonstrated by the fact that, in the autumn of 1922, when Turkey took repossession of the sanitary and other administrations in Constantinople, she at once imposed a preferential sanitary tariff, under which Turkish ships paid two, and foreign ships five, piastres per ton for sanitary dues.

THE HEALTH OF THE SCHOOL-CHILD.

ANNUAL REPORT OF THE CHIEF MEDICAL OFFICER TO THE BOARD OF EDUCATION FOR 1927.[1]

In his report Sir George Newman points out that about 2,000,000 children are inspected every year, a work which occupies some 2000 doctors, 600 dentists, and nearly 5000 nurses. The first object of the service is the ascertainment and effective treatment of the ailing child and the system involves careful examination of each individual, patient follow-up work, the provision of treatment and after-care, and the adaptation of the educational system to the needs and capacity of the subnormal child.

The figures for 1927 are impressive. Of the 4,967,394 children in average attendance at school 36·7 per cent. were medically examined, an increase of 219s r the preceding year. In addition 861,964 were examir l as "special cases," bringing the total to 2,685,739, or 54·1 per cent., of the number in average attendance ; 1,719,844 re-examinations were made, an increase of 5 per cent. on the year before. This figure expresses the increasing extent to which school medical officers are criticising the results of treatment to ensure that maximum benefit is obtained. It is recognised that no medical service can be completely adequate unless it provides for continuous medical supervision. Of the 1252 school medical officers, 269 are whole-time, 600 divide their whole time between school and public health work, and 383 are part-time officers ; 449 undertake specialist work : ophthalmic, aural, anæsthetic, X ray, and orthopædic services occupy 872 part-time and 16 whole-time specialists, and the private practitioner is said to be rendering valuable service. 282 of the school medical officers are women.

Every year about one-fifth of the children examined by routine are found to need some medical treatment, apart from dental disease. Defects of eyesight and enlarged tonsils and adenoids each account for about one-third of the total sum of defects. The number of the children notified in the latter group shows a distinct increase, but otherwise there has been a very slight general decrease in the numbers referred for treatment, and a notable one in the numbers suffering from severe malnutrition. The incidence of defects, other than defective vision, is about 19·5 per cent. in the entrant group and 11 per cent. in the school-leaver group. Some figures, given by the school medical officer for Liverpool, show that the 5-year-old child is approximately half an inch taller and over a pound heavier than he was six years ago, and that the leaver is more than an inch taller and over four pounds heavier than in 1921. Similar figures are recorded from other towns, and the diminished number of children reported as chronically absent from school is another proof of the improving health of the child population. There is also steady progress towards cleanliness ; the numbers of individual

[1] H.M. Stationery Office. 1928. Pp. 204. 1*s.* 6*d.*

children found unclean were: in 1924, 7·4 per cent.; in 1925, 6·5 per cent.; in 1926, 6·4 per cent.; and in 1927, 5·6 per cent.

Development of Treatment Schemes.

It is gratifying to learn that local education authorities are on the whole fully alive to the needs of the children under their control, although financial considerations still hamper the extension of facilities. The most notable advance during 1927 was the extension of orthopædic treatment. New schemes have been approved in 28 areas, bringing the total number to 160. Twenty-six areas instituted artificial light treatment and 56 new specialist officers were appointed, including 33 new dentists and 12 orthopædic surgeons. The school clinics are increasing rapidly; in 1910 there were 30 of them and now there are 1520. Of these, 936 deal with minor ailments, 1039 with dental defects, 569 with visual defects, 80 with enlarged tonsils and adenoids, and 150 with orthopædic defects, while 45 treat ringworm with X rays and 26 supply artificial light treatment. The attendances at these clinics fully justifies their extension; in 1914 it was 123,039; last year it had risen to 663,305.

About 10 per cent. of all children need visual correction, and during 1927 eight additional ophthalmic specialists and 15 new ophthalmic clinics were provided. Good results in the treatment of squint are reported from several districts. The incidence of enlarged tonsils and adenoids is about 5–6 per cent. among unselected school-children, and the causes are still obscure, though it seems probable that they are nutritional rather than environmental. Treatment is now provided at 461 hospitals and 80 school clinics, the total number of children operated on being 80,548—about half of those referred for treatment. For chronic nasal catarrh diastolisation is being tried in Liverpool and London and is giving encouraging results. The essence of this treatment is massage of the nasal passages by soft inflatable rubber bougies. It is said to be particularly well adapted to the relief of those conditions resulting from inability to breathe correctly. Ionisation is now in use by 40 local authorities for otorrhœa; the operative treatment of mastoid disease is undertaken by 32, and other special forms of aural treatment by 31. The incidence of dental disease varies little; in 1927 it was found in 64·6 per cent. of "routine" cases. This does not mean that the treatment provided is without value, for the number of unsaveable permanent teeth diminishes year by year.

The Board are seeking detailed records of the effect of artificial light treatment, but so far little material is available. General inferences show that there is almost universal agreement as to the tonic value of light on tired and languid children, but the evidence for specific effect on particular ailments is conflicting or indefinite, and on the whole negative. The prevention of crippling demands the efficient working of a comprehensive scheme, such as is described from Lancashire. Birmingham found that 84·5 per cent. of non-tuberculous crippling occurred before school age. Delay means longer treatment at greater cost with worse prognosis. Increasing attention is being given to the treatment of postural defects in special clinics.

Nursery Schools and Special Schools.

The increasingly significant problem of the pre-school child is being dealt with in 27 centres at present by "nursery schools"—which resemble homes rather than schools. The aim of nursery schools is to prepare children from 2 to 5 years of age for their school life by providing them with abundance of light, air, and nourishing food, and training them in good habits. The distinction between work and play disappears; the children work when they think they are playing and play when they think they are working, all the while growing strong and cultivating an alert and receptive attitude of mind. The nursery school is an important factor in the correlation of infant welfare work and school medical service.

Evening play centres now number 273, with an average total attendance of 59,000. Several new open-air schools have been opened, and the special educational needs of the children who attend them has received careful attention. The curriculum, while it is less formal than that of the ordinary school and perhaps covers a smaller superficial area, yet has greater depth and is experimental, practical, and intuitive. Playground classes in ordinary schools are also being encouraged in many districts and much improvement in intelligence and alertness has been noted as a consequence. Two new special schools for mental defectives have been opened and two more are projected; the number of mental defectives ascertained during 1927 was 33,000. Through the activity of the Commonwealth Fund Dr. Ralph Crowley, the Board of Education's senior medical officer, visited the child guidance clinics in America last autumn; at present London, Bath, and Stoke-on-Trent are the only areas where any clinic provision is made for the nervous or maladapted child of this country. There are six special residential schools for epileptic children, of whom 2652 were notified as unfit to attend school during 1927. The special schools can only provide for 525, and there is therefore grave need for further accommodation for this group. Classes for stammering children have been conducted in some 30 areas. Blind and partially blind children ascertained during the year numbered 1925 and 4929 respectively; the numbers have decreased considerably. The numbers of the deaf and partially deaf requiring special education were 6091. Their needs are the subject of a special article in the Report.

There seems to be considerable room for improvement in the standard of cleanliness, heating, and lighting in school buildings, and there are still too many obsolete desks. Defects of this kind go far to counteract the work done by the medical inspection and treatment, and call for vigorous and persistent action by the education authorities.

The Secondary School-child and the Young Worker.

The report shows that the health of the secondary school-child compares favourably with that of the elementary scholar, but fuller and more careful records are needed to estimate the relative importance of such factors as strain, extra-school environment, and age on the production of minor abnormalities, which are rather frequent. The elementary school-child, moreover, is improving physically at a greater rate than is the secondary school-child. Although the latter has better school premises, playing-fields, and often substantial mid-day meals, yet he has a longer journey to school very often, longer hours, more home-work, and less satisfactory facilities for the treatment of minor ailments. The remedies suggested are closer supervision of personal hygiene and careful attention to the suitability of the child for scholarship work and for the calling selected for him. The crucial question for the school medical service is whether or not the schools are turning out a better worker year by year, and there is evidence that the physique and health of the leaving child is improving steadily. Thereafter, however, he tends to go backward in health, and the Board is commendably exercised with the adolescent health of its ex-scholars. Education needs to be linked up with employment, just as infant welfare needs to be linked up with school. In many areas the juvenile employment bureau and juvenile advisory committee is in intimate coöperation with the education committee. The certifying factory surgeon, according to Sir George Newman, should also have access to school medical records, and there should be greater uniformity in the meshes of the various sieves through which a young person passes before being accepted for employment. Many private schemes of factory welfare bridge the gap of two years which the State

has left during the critical phase of adolescence. The report reviews a number of these, and looks forward to much more intimate coöperation between them and its own medical service, and to some scheme of the same kind which shall cover all adolescents who at present are no one's special care.

Health Education.

The chief medical officer expresses the opinion that the lack of effective teaching of hygiene is the weakest link in the whole chain of child welfare. The injuries due to ignorance should be prevented, and the study and practice of health should form, from the first, part of the everyday life of the school. Hygiene must not only be taught but must also be practised day by day; otherwise there is no momentum to carry the teaching through adolescence and adult life. Every teacher should bear in mind his direct responsibility in this matter to every individual child. The Board has recently published a special new "Handbook of Suggestions," to constitute a guide in the teaching and practice of hygiene, and regards a knowledge of its contents as part of the necessary equipment of every teacher. The Board is also anxious that girls should learn the first principles of mothercraft, for if they do not learn them at school they are unlikely to have any opportunity for organised teaching afterwards. In elementary schools the girls can visit local welfare centres or day nurseries; the secondary school-girl can approach the subject through elementary science.

Physical Training, School Meals, and Research.

Organised physical training has been a part of the school curriculum for 20 years, and admirable effects have been produced, but the work is still expanding. The Board has decided to advise local authorities to embark on a general reorganisation which will involve changes in the physical training, and this report therefore reviews rather fully what has been done and the proposed amendments. The provision of meals for school-children is increasing; nearly 16,000,000 meals were supplied in England and Wales during the year, half of them being dinners. The danger of turning this provision into an unauthorised kind of poor relief can only be met through medical certification and direction.

The list of research investigations made by school medical officers and special workers is a long one. The subjects studied include postural defects, goitre, infectious diseases, rheumatism, stammerers, backward children, tonsils and adenoids, ringworm, ventilation, and ultra-violet light. The Anthropometric Committee has continued its valuable work.

Conclusion.

The general conclusion formed by the chief medical officer is that, while there is as yet no sign of diminished incidence of the ordinary physical defects of school life, there is, nevertheless, evidence that the general physical condition, as shown by physique, health, nutrition, and cleanliness, tends steadily to improve. The school doctor has an important part to play in the medico-educational problems of the nation; he must keep his horizon wide, take a broad view of medicine, understand his affinities with the educationist and the psychologist, and thus play his proper rôle in the creation of the right school environment during the passage from childhood to adolescence. The report will encourage all who are collaborating in this great national scheme to persevere in their duties though these may seem arduous, dull, and sometimes unproductive. Sir George Newman points out that the routine work of the school medical officer has a vastly wider purpose than the collection of medical statistics and even the individual relief of the patient. It makes practicable a fuller education of the people as a whole, and is the prelude of national efficiency. In the audit and account of this work may be found a service of science and humanity which is silently but certainly changing the prospects and hopes of the English people.

MEDICINE AND THE LAW.

A Vinegar Prosecution.

THE last annual report of the Ministry of Health recorded the fact that 1553 samples of vinegar were taken under the Sale of Food and Drugs Acts during 1927; of these, 142 were found to be adulterated or not up to standard, chiefly by reason of the deficiency of acetic acid. The percentage seems unduly high; it works out at 9·1 as against a figure of 6·2 for 1926. In some cases vinegar sold as "malt vinegar" was found to be not brewed but artificial vinegar. A case has recently come before the Divisional Court which seems to indicate a disinclination on the part of magistrates to take a serious view of adulteration. A prosecution took place before the Atherstone bench on a charge of selling table vinegar which was 100 per cent. artificial. The magistrates, according to a summary of the case in the *Solicitors' Journal*, dismissed the summons on the several grounds that there was (*a*) no statutory standard of vinegar, (*b*) no evidence of guilty knowledge, and (*c*) no reason for imposing a penalty upon a defendant who had acted in good faith. The inspector appealed on the ground that the county analyst had proved that three grades of vinegar exist; but the appeal was countered by the plea that the magistrates had dismissed the case under the Probation of Offenders Act and that their decision could not now be disturbed. The Probation of Offenders Act was not apparently mentioned in the "case stated" which came before the Divisional Court; the fact was merely recorded that the magistrates dismissed the summons because no offence had been committed. The Lord Chief Justice observed that the allegation that the vinegar was 100 per cent. artificial was uncontradicted, and that, as the defendant called no evidence, the magistrates ought to have found the charge proved on the uncontradicted facts. The Divisional Court remitted the case to the magistrates with a direction to that effect. The result is somewhat obscure. If the magistrates were acting under Subsection 1 (1) of the Probation of Offenders Act, 1901 (as the defendant apparently contended on appeal), then they must already have considered the charge to be proved; otherwise they could not have acted under that particular enactment. The statute provides that, if the court of summary jurisdiction thinks that the charge is proved, but is of opinion that the character, antecedents, age, health or mental condition of the accused, or the trivial nature of the offence, or the existence of extenuating circumstances, make it inexpedient to inflict any punishment or any other than a nominal punishment, or to release the offender on probation, then the court may, *without proceeding to conviction*, either dismiss the charge or bind the accused over. The Divisional Court may give the Atherstone bench a strong hint of its opinion, but, if that bench is determined to operate the Probation of Offenders Act in this particular case, the magistrates can still dismiss the charge without proceeding to conviction. One result of sending the case back to them may be a little additional local publicity for the facts alleged in the summons. The Food and Drugs (Adulteration) Act, 1928, now in force, states the law perfectly clearly: "No person shall sell to the prejudice of the purchaser any article of food or any drug which is not of the nature, or not of the substance, or not of the quality, of the article demanded by the purchaser." If it is to be a defence that the law specifies no standard of what is vinegar (or any other article), the law had better be amended.

A Coroner's Dilemma.

Parliamentary draftsmen are probably not sanguine enough to believe that they can think of every contingency. A small gap in the Coroners Acts is disclosed in the legal journals. The amending Act of 1926 had a provision (Section 20) to avoid the simultaneous progress of investigations into cases of

murder, manslaughter or infanticide, both before a coroner, on the one hand, and before examining justices and assize courts on the other. The coroner "in the absence of reason to the contrary," is to adjourn his inquest "until after the conclusion of the criminal proceedings." The clerk of the appropriate court is to inform the coroner of the result of those proceedings and, if the coroner then decides not to resume the inquest, the coroner furnishes the registrar of deaths with a certificate stating the result of the proceedings and including any necessary particulars. An inquest was begun last year upon the death of a child. The magistrates committed the child's mother to the November Assizes on a charge of wilful murder. The coroner apparently adjourned his inquest as directed by the 1926 Act. The next step, however, contemplated by the statute cannot be taken. The Home Secretary has ordered the woman's removal to an asylum: she will now not be tried, and consequently the "proceedings" cannot be "concluded" with any "result" of which the coroner can be officially informed. Thus, it would seem, the inquest must take its course. The coroner has found himself obliged to issue a warrant against the mother, bind over the police superintendent to prosecute, and bind over the witnesses to appear and give evidence. It would have been feasible to take the poor woman to the assizes for the formal purpose of obtaining a verdict of "Guilty, but insane." Quite apart from the expense of this course, however, public opinion would deprecate it.

An Unregistered Dental Association.

A case was recently heard before the Oldham borough justices in which a manager of the Co-operative Wholesale Society (Health Insurance Section) was summoned for "practising or holding himself out to practise dentistry," his name not appearing in the Dentists Register. It was argued on behalf of the British Dental Association that it was not essential for the commission of an offence of this kind, that the person should be the actual one who performed the operations of dentistry. A body corporate or limited company could carry on dentistry if the majority of its directors and all its operating staff were dentists, though not otherwise. It was stated that the C.W.S., being an approved society under the Health Insurance Acts, had not agreed to an increase in the scale of dentists' fees in 1926, and despite the fact that it was not a registered organisation under the Dentists Act, had endeavoured to set up dental clinics in certain northern towns. An unregistered dental surgeon had been given charge of such a clinic at Oldham where there was a clerk and four dental mechanics, and patients had been treated there on behalf of the Co-operative Dental Benevolent Association, which was unregistered under the Act. In defence counsel argued that responsibility for what had been done lay with the Association and not with its salaried manager. The chairman and the bench were of opinion, however, that the latter had unlawfully held himself out as practising dentistry and fined him £50, also awarding £25 costs to the prosecution. They agreed to state a case for appeal to the High Court.

Two Deaths Under Anæsthesia.

Arrangements at the Weir Hospital, Balham, were criticised at an inquest on Jan. 2nd on a boy of 4 who died in the institution whilst a fracture of the leg was being reduced under an anæsthetic. There are two resident doctors at the hospital but one of them was away when the child was brought for treatment. The resident medical officer first administered open ether and then instructed a nurse to hold the mask while he reduced the deformity. Death followed from heart failure, despite employment of artificial respiration and stimulants, and at autopsy it was found that the boy had a full stomach which adhered abnormally to the liver. The coroner, in recording a verdict of death by misadventure, said that the resident medical officer had exercised careful judgment in the circumstances, was justified in administering the anæsthetic, and did so properly. At the same time he considered it distinctly inadvisable that the hospital should be left with only one doctor, since only in grave emergency should a medical man play the dual part of anæsthetist and surgeon. It was stated in evidence that the hospital had two visiting surgeons, but it was not customary to call them in except for big operations.

On Jan. 8th the Westminster coroner recorded a similar verdict in the case of a boy of 2 who died during an operation at Charing Cross Hospital. Post mortem large pieces of undigested food were found in the stomach and the pathologist, in ascribing death to syncope, said that the presence of food was probably in part responsible for the accident. The mother said she had not received any instructions about meals, and the doctor who gave the anæsthetic said that she (the doctor) had not seen the child on any previous occasion. The anæsthetic was ethyl chloride, followed later by a mixture of chloroform and ether. The coroner remarked that he thought it was the common practice in hospitals to warn parents not to give their children meals a few hours before anæsthetics would be administered.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Study Leave.

THE refusal of the Minister of Local Government and Public Health to sanction the proposal of the Grangegorman Mental Hospital Committee to give one of their medical officers six months' study leave with pay has given rise to criticism. As was pointed out by a member of the committee, the institution would benefit by the course of study which Dr. J. Dunne proposed to pursue. Another member mentioned that the Minister of Defence had thought it wise to send young officers to study the methods of foreign armies.

The lack of any provision for study leave is a grave fault in the public medical services of the Irish Free State. The Committee of Inquiry on National Health Insurance and the Medical Services in its Interim Report in 1925 made a strong recommendation in favour of the grant of study leave at regular intervals to dispensary medical officers. It was recommended that a period of not less than three months should be given at least as often as once in every five years, and that evidence of having taken advantage of such opportunities should receive consideration where promotion was in question. During such leave the medical officer should receive full salary without deduction for payment of a substitute, and a grant should be made to cover fees for study. It is possible that such a procedure might require legislative authority, but there appears to be no good reason why the Government should not before now have taken action on the Report of the Committee of Inquiry.

The 83 (Dublin) General Hospital.

The annual dinner of the Dublin Unit which staffed the 83 General Hospital, B.E.F., in 1917–18, was held last Saturday night in the Council Room of the Royal College of Surgeons, Colonel Sir William Taylor presiding. Some 15 members of the unit were present.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The New Health Department.

THE Scottish Department of Health came into existence on Jan. 1st. The Scottish Board of Health passed out of existence on Dec. 31st. In point of form the Board was a survival from an older and more amateurish conception of Government service. It was essentially an advisory board with no powers

apart from the President, and, in many respects, quite unsuited to the work of executive administration. The new department is organised on the same general lines as the Ministry of Health. Personal responsibility, under the political direction of the Secretary of State, becomes once more a possibility and a reality. But, in 1919, when the Board of Health was formed, it would have been, for historical reasons, difficult to establish the present type of department. Fortunately, its establishment coincides with the projected revolution in local government. The new department ought, therefore, to be decidedly fruitful for Scottish government, both central and local.

Housing.

At a Conference of the Scottish Labour Housing Association in Glasgow, the Rev. James Barr, M.P., who was for two years a member of the Royal Commission on Housing, gave some striking figures from that report and from subsequent returns. The Commission, in 1917, estimated that Scotland had a shortage of 121,000 houses, without allowing for natural expansion of population and without exacting a higher standard than three persons per room (as against England's two). In 1919 the local authorities themselves admitted a need for 113,000 houses. The Board of Health's estimate in subsequent years was that for every ten years from 1919 there should be added 10,000 houses yearly, thus increasing the shortage to 213,000 houses. Scotland is thus, on official figures, still about 100,000 short. Meanwhile, the local authorities and the central department have been very active, and it is estimated that, including both subsidised and unsubsidised houses, about 100,000 new houses have now been provided. Of these, about 90,000 are subsidised houses built by local authorities or by private persons. In 1928, I am informed, the total built was about 18,000. In 1927 it exceeded 20,000. There is, however, no real falling off, the lesser number in 1928 being due to the fact that there are no new steel houses. There are signs of renewed pressure for an increase of two-room houses. This indicates a failure to grasp the true position. Scotland has already many times more two-roomed houses in proportion to the number of larger houses. And two rooms, it is to be remembered, mean literally just two rooms, not, as it might in England mean, a kitchen and two bedrooms. The industrial world is slow to grasp the simple arithmetical fact that you cannot house a family of seven in two rooms without producing an overcrowding that exceeds three persons per room. As to the one-room house, public opinion is agreed that it should go; but the fact remains that several hundreds of thousands of people in Scotland occupy houses of one room, sometimes very grossly overcrowded. There is still, therefore, a long programme to work off and the next 20 years will not see the end of it.

A Radium Institute for Scotland.

It is satisfactory to learn that the managers of Edinburgh Royal Infirmary have approved of a scheme to establish a radium institute which will be the first in Scotland. For this purpose they have decided to reconstruct a property at Murrayfield, and to contribute, if necessary, a sum of £40,000 from the unrestricted finances of the infirmary. A gift of £10,000 has already been made for the purchase of radium for a Glasgow hospital, and Edinburgh, with its great traditions as a centre of medical science and skill, should not be behindhand in this development. It is intended that the radium institute should be capable of accommodating 30 in-patients, and of serving the needs especially of Edinburgh and the south-east of Scotland. It is eminently desirable that the supply of radium should be concentrated in one or two centres, instead of being distributed among various local hospitals. Local needs can much better be satisfied by providing for the attendance of patients at the central institute, where they will obtain the advantages of the most complete technical equipment and the most expert skill in utilising it. A radium institute has been established in London, and similar facilities are available in some provincial centres in England. But Scotland has hitherto lacked such a centre, the establishment of which will undoubtedly meet a felt need. Government assistance may be expected in obtaining an adequate supply of radium, and public support should not be lacking towards the proper equipment and development of the institute.

Training of Nurses.

In moving the adoption of the annual report of the Scottish Branch of the Queen's Institute of District Nursing, Dr. J. Parlane Kinloch, chief medical officer of the Scottish Department of Health, said the time was opportune to survey the whole position of the nursing service in its relation to public health work. Training schools for nurses had been recognised by the General Nursing Council under the Nurses Registration Act of 1919. It was a serious reflection on hospital authorities generally that the endeavour to link up the general hospitals with the fever hospitals, the sick children hospitals, the maternity hospitals, the mental hospitals, and the special hospitals, with a view to providing a common training school for nurses, wherein the probationer nurse could receive within a period of four years a comprehensive training in nursing methods, had been unsuccessful. It was only necessary to look to the medical training schools to recognise what this failure to organise the nurses' training schools really meant. The great training centres in Scotland were doing increasingly admirable work, but he thought there had been a tendency to overdo the drilling in our great hospitals. If machine-like drilling was carried into the ward it swamped personality. The biggest thing that could happen to the nursing profession was for the authorities of our voluntary and statutory hospitals and for the Council of the Queen's Nurses to use their prestige and influence to bring those bodies about and get regional training schools for nurses built around the walls of the four universities of Scotland.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

"Christian Healing."

SOME interest has been aroused in medical circles by the report given recently by a Commission of Bishops and Deputies to the General Convention of the Protestant Episcopal Church. This Commission has been considering evidence of "Christian healing" since its appointment three years ago and has heard physicians and neurologists as well as parish priests and the hearsay testimony of persons of unquestioned veracity. On the one hand the Commission recommended that all faith-healing should be carried on in close coöperation with medical science, but on the other they state that throughout the world spiritual healing is no longer the hope of a few but the belief and practice of a large and rapidly increasing number of persons. On these conclusions the *Ohio State Medical Journal* has the following editorial comment:

> A proper spiritual attitude cannot help but be beneficial to a physician who serves his patients with a reverence for the forces of God. In like manner, a spiritual and reverential attitude on the part of the patient is desired, but to assume that faith or religion even in a small measure can be a substitute for definite medical sciences is fallacious. Too many instances have been recorded where religious zealots neglected and ignored physical conditions such as cancer, tuberculosis, diabetes, and Bright's disease until even their own "faith" could not prevent them from suffering a painful and early death.

Income-tax Deductions.

Six years ago the Commissioner of Revenue denied to physicians the right to deduct from their taxable incomes the expenses incurred in attending professional meetings. Since then the American Medical

Association has carried on a consistent campaign for the reversal of this decision. Legislation favourable to the Association's claims was passed through the Senate during the last session of Congress but lost in a compromise with the lower house. Now a legal victory has been won through an appeal to the Board of Tax Appeals. The physician who fought the test case had expended during the years 1920, 1921, 1922, and 1923 the respective sums $16, $230, $375, and $384.46 for "railroad fare, accommodations, and meals" in connexion with meetings of medical associations. He had not been allowed to deduct these sums in whole or in part from his taxable income. The Board of Appeals has overruled the Commissioner's decision, and unless an appeal is made by the latter to higher courts before April, 1929, the ruling will become final and within certain time-limits will be retrospective. It is estimated that the medical profession has paid as much as half a million dollars under the former ruling and that a large part of this sum will be recoverable.

Negative Results with Tubercle Vaccines.

The results of experiments with two different vaccines were reported on Dec. 6th to the National Livestock Sanitary Association by Stillman J. Stanard, director of agriculture of Illinois. From the scanty press accounts as yet available it appears that one vaccine was the celebrated B.C.G. and the other a ricinoleated vaccine prepared by Dr. Larson, of the University of Minnesota. Ten infected cattle were added two years ago to a herd of 60 tuberculin-tested cattle. The latter consisted of 20 controls and 20 animals immunised by each of the two vaccines. It appears that after two years autopsies of this herd show that only a few of the animals "immunised" with the Larson vaccine had escaped infection; all the controls and all animals "immunised" with B.C.G. were infected.

Rejuvenating Epithelium.

For some years past Dr. Joseph Franz Kapp, of New York, has been working on a method for rejuvenating the epidermis at the time of life when it begins to share in the changes of senescence. By immunising rabbits with a maceration of the skin of young pigs he obtained a serum which, when administered subcutaneously, led to an increase in mitosis and a restoration of capillaries in the derma. A preliminary report, recently presented by Dr. Kurt Holzapfel, of Berlin, and himself, deals with the effect of this novepithel, as it is called, on 71 cases of various skin affections. It proved wholly or partially successful in cases of bedsore, eczema, ulcus cruris, alopecia, zoster, and scleroderma, while the effect was small or absent in psoriasis and rosacea. The results, they suggest, are sufficiently favourable to warrant further investigation on a large scale. At present the serum is being tested at the Berlin Charité by Prof. Friedr. Kraus, in Vienna by Prof. Alf. Perutz, while Prof. Erich Hoffmann is trying experiments on a large scale at the Dermatological Clinic of Bonn. The preparation is not yet on the market in America, but it has been placed at the disposal of dermatologists, such as Dr. J. Eller at the New York Post-Graduate Hospital, Dr. Conrad Miller, of Chicago, and Prof. Otto Lerch, of Tulane. Kapp himself was stimulated to further trial of the preparation by finding it promise well for the tormenting pruritus of elderly persons.

Valentine Mott.

At a recent meeting of the New York Academy of Medicine Dr. Louis F. Bishop, of New York, read a paper on Valentine Mott, a surgeon who in his day enjoyed an international fame for deftness of hand and boldness of execution little less than that of his London teacher, Sir Astley Cooper. It is remarkable that at the time of his graduation in 1806 Mott gave no indication of his interest in surgery, and concerned himself chiefly with chemistry; but the teaching and example of Cooper developed in the New York physician a zest for surgery which grew more and more keen the longer he remained in London. After leaving Cooper's influence, Mott, as was then the custom with young American medical graduates, proceeded to Edinburgh, where he sat at the feet of Gregory, Home, Duncan, Hope, and Playfair. Two years after his return to New York he was elected to the chair of surgery at Columbia College. In his sketch of Mott's professional life Dr. Bishop claimed that he was the first to deliver private lectures in America on any medical subject, and the first to demonstrate to a class the steps of surgical operative surgery as then practised.

THE CONGRESS OF MEDICINE IN EGYPT.

OVER 2000 medical delegates and members of the medical profession, drawn from Europe, North and South America, the Near and Far East, gathered in Cairo on Dec. 15th last for the twofold purpose of celebrating the Centenary of the Cairo Faculty of Medicine and joining in a Conference on Tropical Medicine and Hygiene.

Since Clot Bey was first summoned from France by Mohammed Ali in 1825 to inaugurate a medical service in Egypt, enormous strides have been made, and if during the first half of this period progress was slow, and even at times interrupted, during the last 50 years a hospital service, a centre of medical education, and a public health administration have emerged which reflect immense credit upon the Governments by which they have been fostered, and afford an enduring memorial of the many notable men—such as Bilharz, Sandwith, Milton, Keatinge, and Loos (to mention only a few) who have chiefly shaped the course of events. It was right that advantage should be taken of the Centenary celebration to invite the attendance of representatives from all over the world to see for themselves how surely the foundations of Egyptian medicine have been laid, how bright are the prospects for its future, and with what zeal the problems of preventive and curative medicine peculiar to the land of Egypt are being tackled. The British delegation was numerically small but representative, including, amongst others, Sir George Newman, Sir Robert Philip, Sir Berkeley Moynihan, Sir Holburt Waring, Sir StClair Thomson, Sir William de Courcy Wheeler, Sir Frank Collyer, Dr. Monro Kerr, Prof. Nuttall, and Dr. J. B. Christopherson.

The Proceedings of the Congress.

The proceedings opened on the morning of Dec. 15th with a function in the Opera House attended by H.M. King Fuad. After an introductory address by the President of the Congress, His Excellency the Minister of Education, addresses were presented by representatives of the Governments of France, England, United States of America, Germany, Italy, Greece, and Japan, Sir George Newman being the English spokesman. The same afternoon King Fuad opened in state a Medical and Sanitary Exhibition in the grounds of the Royal Agricultural Society, in which the Egyptian Department of Public Health had staged an attractive display of models illustrating every phase of the work now proceeding.

The following morning, Sunday, the 16th, in a marquee of colossal proportions and oriental design, H.M. the King laid the foundation-stone of the new Hospital and Medical School which is on the point of being built to take the place of the historical Kasr-el-Aini Hospital. This new hospital is designed to provide 700 beds, and the site available—an ideal one upon Roda Island—allows ample room for medical school, students' hostel, and sports grounds immediately adjacent to the hospital. The plans available for inspection suggest that with the abundant funds at their command the architects have designed a group of buildings that will be the envy of many a larger city than Cairo. Later the same day a large

audience was presided over by Sir Berkeley Moynihan, who, as President of the Royal College of Surgeons of England, conferred the diploma of Fellow upon Ali Bey Ibrahim, Professor of Clinical Surgery and Sub-Dean of the Faculty of Medicine. The enthusiasm aroused in the audience by this compliment paid to an outstanding surgeon and a popular personality lasted on for the next two hours, during which a never-ending procession of delegates made their bow to the President of the Congress and handed him their addresses.

The Work of the Congress.

The work of the Congress proper, which started on Monday, Dec. 17th, was divided up into 16 sections devoted to such subjects, among others, as medicine, surgery, bilharziasis, dysentery, tuberculosis, leishmaniasis, and malaria, and sessions were held of some or all of these on the mornings of five days. Résumés of the chief contributions, which were delivered in either English, French, or German, were printed and circulated for the benefit of delegates, who were thus enabled to select the place of their attendance to their individual taste. The chief interest perhaps centred round the subjects of special local importance, such as tuberculosis, trachoma, bilharziasis, and pellagra, and it is only necessary to mention that Drs. Van der Hoeve, Giemsa, Schuffner, Castellani, Christopherson, Ashford, and Wilson took part, to ensure that the Proceedings of the Conference, when they appear, will be studied with especial interest. Whilst the attendance at the sectional meetings was good, it must be confessed that a punctilious devotion of five mornings to the Congress seemed too much like work to many of those who had come long distances to visit Egypt for the first time, and many a Congress badge—a charming gilt emblem of Im-Hotep—was to be seen in the Cairo museums, the mosques, and elsewhere during Congress hours.

At the official closing of the Conference in the afternoon of Dec. 22nd, 13 honorary degrees of the University of Cairo were conferred upon delegates.

Social Events.

A full programme of social events filled up the afternoons and evenings. The King received the whole company in the Abdin Palace on the opening night. The following evening the capacity of Shepheard's Hotel was fully taxed on the occasion of the official dinner presided over, in the absence of the Prime Minister through ill-health, by His Excellency Shahin Pasha, and on yet another evening Their Excellencies Lord and Lady Lloyd had invited British delegates and others to an evening reception at the Residency. Tea parties at the Medical School, at the Pyramids, and at the Delta Barrage were most popular afternoon functions.

The warmest praise is due to the Organisation Committee, owing to whose efforts everything passed off without difficulty or hitch, in spite of the large numbers, while a special word of thanks is due to the Ladies' Committee, whose organisation enabled those accompanying the delegates to visit the sights of Cairo and the neighbourhood under expert guidance. Special concessions granted by the railway companies and the hotels assisted materially those who wisely wished to combine with their attendance at the Conference visits to the treasures of Upper and Lower Egypt. The opportunity so afforded of seeing the antiquities and gaining an insight into the Medical School of Cairo and the problems of public health which face the Egyptian Government made the visit of those fortunate enough to be able to attend a very memorable one.

METROPOLITAN ASYLUMS BOARD.—The Board has approved a scheme, costing about £30,000, for the provision of a new nurses' home at the Downs Hospital for Children.

RESEARCH ON TUBERCULOSIS.—Mr. Halley Stewart has given £700 a year for five years towards special research at the Brompton Hospital for Consumption and Diseases of the Chest.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH FOR 1928.

THE customary circular, lately issued by the Ministry of Health, shows that the 1928 reports are to be ordinary, and not "survey," reports. Attention to new features is drawn by marginal lines.

The circular announces that the Registrar-General will distribute his short list of the causes of death in the various districts in February or March, 1929, with the exception of the county aggregates, which will be distributed in April. The hope is expressed that this early distribution of the figures will enable each report to be completed not later than the middle of May. Reference is made to the fact that in certain districts local estimates of population and classification of deaths are preferred, but it is particularly requested that when this is the case the Registrar's figures shall also be included in the report in order to facilitate comparison with the figures for other areas. The Registrar-General receives frequent applications from medical officers of health for information as to the death-rates in the whole country from cancer, from pulmonary and other forms of tuberculosis, and from childbirth, and to obviate the necessity for such applications, the death-rates mentioned will be published in the Registrar-General's Weekly Return as soon as the necessary data are available.

The following are some of the matters emphasised in the circular. Particulars are to be given of the amount, situation, and nature of accommodation, and by whom provided, of clinics and treatment centres of all kinds, including orthopædic and light clinics. Full information is demanded as to applications for the registration of maternity and nursing homes and the result of such applications. Up to July 1st this will only apply to maternity homes, but after that date to both maternity and nursing homes. County councils are also required to give particulars of applications for the delegation of their powers under the Nursing and Maternity Homes Registration Acts. Any special arrangements made for the investigation of maternal deaths and cases of puerperal fever are to be described.

The results of the analyses of public water-supplies, whether piped or not, are specially asked for. Other matters stressed include the adequacy of the arrangements for the disposal of the dead; arrangements made for the publication or dissemination of knowledge relating to health or disease; particulars of inspections made or actions taken under the Rag-Flock Acts, 1911 and 1928; action taken under the Food and Drugs Acts, including the Public Health (Preservatives, &c., in Food) Regulations, 1925–1927); particulars about work done at laboratories for the chemical and bacteriological examination of food; the prevalence of animal or insect pests, such as rats or mosquitoes, and the measures taken for their suppression; and particulars of action taken under Section 66 of the Public Health Amendment Act, 1925, for the prevention of blindness or the treatment of persons suffering from any disease or injury to the eyes.

The study of these annual reports followed by the perusal of the circular leaves one in the hope that the day is not far distant when the decision of the Registrar-General as to estimates of population and classification of deaths will be accepted as that of an umpire, and that before long, perhaps with the good offices of Geneva, we shall have one system of classifying deaths associated with childbirth in every country in the world.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 29TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 131 (last week 201); scarlet fever, 2275 (last week

2451); diphtheria, 1225; enteric fever, 40; pneumonia, 1616; puerperal fever, 43; puerperal pyrexia, 86; cerebro-spinal fever, 6; acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 14; dysentery, 4; and ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified in the following 17 counties: London, 10 (Poplar); Chester, 2; Derby, 12; Durham, 26 (Jarrow 13); Essex, 2 (West Ham); Huntingdon, 1; Lancaster, 10; Leicester, 6 (county borough); Northampton, 6 (county borough); Northumberland, 10 (Tynemouth C.B.); Nottingham, 9; Soke of Peterborough, 2; Stafford, 3; Yorks, West Riding, 12 (Halifax 7); Brecknock, 1; Glamorgan, 13; Monmouth, 6.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Jan. 1st–2nd was as follows: Small-pox, 28 (4 under treatment); scarlet fever, 2248; diphtheria, 2201; enteric fever, 19; measles, 37; whooping-cough, 530; puerperal fever, 23 (plus 5 babies); encephalitis lethargica, 74; poliomyelitis, 5; other diseases, 28. At St. Margaret's Hospital there were 13 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 24 (0) from measles, 13 (1) from scarlet fever, 56 (18) from whooping-cough, 52 (8) from diphtheria, 49 (5) from diarrhœa and enteritis under two years, and 83 (15) from influenza. (The figures in parentheses are those for London itself.) The number of deaths from influenza during the previous seven weeks were 68, 72, 49, 56, 60, 61, and 69 respectively.

The fatal cases of enteric fever were reported from Grimsby and Sheffield. Liverpool reported 7 deaths from measles, Cardiff 3, whilst Lincoln, Middlesbrough, and Newcastle-on-Tyne had 2 each (Belfast 7). There were 8 deaths from whooping-cough in Manchester, 6 in Leeds, and 4 in Salford. Five deaths from diphtheria occurred in Liverpool, whilst Liverpool also reported 4 deaths from diarrhœa. Outside London the largest number of deaths from influenza was Birmingham, 6; Manchester reported 5, Liverpool 4, and Stockport, Leeds, Hull, and South Shields 3 each. (The figure for Glasgow was 7.)

The number of stillbirths registered during the week in the great towns was 264 (corresponding to a rate of 55 per 1000 total births), including 41 in London.

The Services.

ROYAL ARMY MEDICAL CORPS COMMISSIONS.

A LIMITED number of commissions in the Royal Army Medical Corps without entrance examination are being offered to qualified practitioners under 28 years of age. Applications should reach the War Office not later than Jan. 25th, and information as to conditions of service and emoluments may be obtained from the Under Secretary of State, War Office (A.M.D.1), Whitehall, London, S.W. 1.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. N. S. Meiklejohn to be Surg. Capt.

Surg. Lt.-Comdrs. (D.).—A. T. Dally to *Pembroke*, for R.M. Infirmary, Deal; J. T. Wood *to Vivid*, for R.N. Hospl., Plymouth; M. F. Hopson to *Pembroke*, for R.N. Barracks; and W. E. A. Sampson to *Vivid*, for R.N. Barracks, Devonport.

Surg. Lts. E. W. Graham to *Victory*, for R.N. Barracks, Portsmouth; R. G. E. Richmond to *Pembroke*, for R.N. Barracks, Chatham; and H. S. Marks to *Vivid*, for R.N. Barracks, Devonport.

ROYAL ARMY MEDICAL CORPS.

Capt. G. H. Barry to be Maj. (Prov.), and remains secd.

D. Blewitt to be Lt. on prob.

ARMY DENTAL CORPS.

Capt. G. A. Ballantyne resigns his commn.

ROYAL AIR FORCE.

Squadron Leader A. Grant to be Wing Comdr.

INDIAN MEDICAL SERVICE.

Lt. W. Scott to be Capt. (prov.).

Correspondence.

"Audi alteram partem."

THE TREATMENT OF HÆMORRHOIDS BY INJECTION.

To the Editor of THE LANCET.

SIR,—I was greatly interested in Mr. Christopher Howard's article in THE LANCET of Jan. 5th on Submucous Injection of Hæmorrhoids with Quinine Urea Hydrochloride. As he writes, the method he describes differs from my own mainly in the choice of the solution used and in minor details of technique. I myself tried using quinine urea hydrochloride some years ago. I did so with some trepidation, because a good many cases of serious sloughing of the skin had been reported after the use of this drug hypodermically as a local anæsthetic, although it had been used for that purpose in a strength as low as 1 per cent. I found that a 1 per cent. solution of quinine urea hydrochloride was quite ineffective for the treatment of internal hæmorrhoids and eventually I tried a 2 per cent. solution. Even this strength was found to be very variable in its action, and the symptoms, such as hæmorrhage and prolapse, did not yield immediately after the first injection in the way they almost invariably did to the strong carbolic glycerine solution which I was in the habit of using at that time. Nevertheless I encountered several cases of unpleasant sloughing even amongst the few cases which I treated with quinine urea hydrochloride, and where sloughs occurred there was a considerable amount of pain after the anæsthetic action of the solution had passed off. At that time I did not practise submucous injection, but deliberately injected the solution into the centre of the pile-mass. A priori, one would expect sloughing to take place more readily when the solution is injected submucously and when a considerable degree of distension of the submucous tissue is aimed at, and still more so when a solution as strong as 5 per cent. is employed. It was therefore with some surprise that I read in Mr. Howard's article of the success of this method in his hands and in those of Dr. Bensaude, of Paris. It is to be hoped that later on Mr. Howard will publish his further experiences with the treatment, dealing more particularly with the question of the permanence of the "cure." For my own part I have obtained such uniformly satisfactory results with the 5 per cent. carbolic in almond oil which I have been using for over two years (see THE LANCET, 1928, i., 543), that I do not feel tempted to make any experiments with other methods. Quinine urea hydrochloride has been used largely for the injection of hæmorrhoids in the United States of America, notably by Dr. Terrell and Dr. T. Chittenden Hill—but I gather that it has been superseded by the majority of "ambulant proctologists" there in favour of the carbolic-oil submucous injection.

One objection that I see to the use of a solution of quinine urea hydrochloride is that it is at best only very feebly antiseptic, and, if by some mischance the solution became contaminated, very serious results might follow. The carbolic-oil solution has the great advantage of being a powerful antiseptic and of being almost "fool-proof" from that point of view. Nevertheless I agree heartily with Mr. Howard that every detail of the procedure should be carried out with full aseptic and antiseptic precautions, *more especially because* the site of the operation is necessarily a septic one. From this point of view the tendency of quinine urea hydrochloride to produce an urgent desire to defæcate some ten minutes after the injection seems to me a rather grave disadvantage.

"There are more ways of killing a dog than by hanging it," and I have no doubt that there are other solutions equally as good as the 5 per cent. carbolic-oil solution; but the results I have obtained with this solution have been so uniformly satisfactory that I doubt whether there is anything better. The frequent appearance of articles in the medical press on various

methods of treating hæmorrhoids by injection and by other "ambulatory" methods shows that at last the profession has realised that operations on hæmorrhoids are disliked by patients and that the latter, too, are becoming aware that operation is not the only or the most satisfactory way of dealing with this common and troublesome ailment.

I am, Sir, yours faithfully,

ARTHUR S. MORLEY.

Upper Wimpole-street, W., Jan. 5th, 1929.

LONDON COUNTY COUNCIL (GENERAL POWERS) ACT, 1920.

To the Editor of THE LANCET.

SIR,—This Act, passed some years ago, has recently been put into action. One clause of the Act required that any medical practitioner, carrying on work of the nature covered by the Act, might send in an "exemption certificate" annually and so avoid taking out the licence which is necessary for all other persons. The underlying idea of the Act in question was undoubtedly good, in that it was a real attempt to protect the public from unqualified persons, who were getting bolder in irregular practice, and had even gone the length of installing X ray apparatus for the depilation of facial hair, "when nature in vagary mistakes for Thomas, Mistress Mary,"—a most dangerous and gross form of treatment. Quite apart from the efficacy of such a procedure, many of the people treated may, sooner or later, in place of a few hairs have telangiectases, if nothing more serious. It was felt therefore, much as the idea of yet another body being allowed to regulate the practice of a duly registered medical practitioner was resented, that the Act had been passed and it was our duty to obey it. The London County Council have been most helpful and sympathetic so far as the medical members of the British Institute of Radiology are concerned, and they have agreed (in lieu of the personal certificate signed by two medical practitioners) to accept a single certificate signed by officials of the Institute, together with a schedule of names, as complying with the requirements of the Act. In acknowledging the schedule the official of the L.C.C. made the following observations:—

"With regard to the question of inspection, I would point out that, provided the required certificate has been furnished in respect of an establishment carried on by a registered medical practitioner, the Council's officers have no power to inspect such establishment."

As one of the most objectionable features of the Act was the domiciliary visit of inspection to the consulting-room of a registered medical practitioner, I think you will do a great service by making the above comment widely known. There is much in the Act that appears capable of more than one interpretation, and it seems likely that this may have to be solved by a friendly action in the law courts, but such a question is hardly of immediate concern.

I am, Sir, yours faithfully,

London, W., Jan. 3rd, 1929. STANLEY MELVILLE.

TONSILLECTOMY OR GALVANO-PUNCTURE?

To the Editor of THE LANCET.

SIR,—I have read with interest Dr. Berkeley Way's lucid account of his attack of general staphylococcal infection (THE LANCET, Dec. 29th, 1928, p. 1367). Cases of the kind are not uncommon, but an invasion of the tonsil by *Staphylococcus p.* is surely very rare. I have never seen such a condition, and I cannot believe that in Dr. Way's case the primary nidus of the infection was in the tonsil. There was diffuse furunculosis, and what Dr. Way rather vaguely calls carbuncles, which I presume were very large furuncles. There were abscesses in the axilla, obviously not of tonsillar origin, and there were quinsies, which I presume were peritonsillar abscesses, and therefore behind the capsule. To entirely liberate the collections of pus from these pocks behind the tonsil a resection of the tonsil was necessary. Adhesions of the capsule to the peritonsillar tissue behind were, in the circumstances, inevitable, but could not be attributed to the effect of the cautery unless the burner had perforated the capsule, which one is careful to avoid doing when using the galvano-cautery.

These cases of diffuse staphylococcal infection last for months and are very troublesome. I have seen one which ran on for two years, but eventually yielded to an autogenous vaccine. One would think, however, that in Dr. Way's case a considerable auto-immunisation had taken effect by the time the tonsils were removed. I am unable to follow his reasoning when he suggests an analogy between a septic tooth and a septic tonsil. A tooth is a purely mechanical structure, designed for biting and mastication; the tonsil is a lymph gland with a highly specialised function: at present we know only of its protective action, but it may eventually be proved to be one of the endocrine organs. In the many hundreds of cases which I have treated with the galvano-cautery I have never seen any closure of crypts, nor any recurrence of sepsis; and the red vascular appearance of the mucous membrane quickly subsides under the continued use of the chloramine spray.—I am, Sir, yours faithfully,

W. S. WHITCOMBE, M.D.

Harley-street, W., Dec. 30th, 1928.

A TUDOR ACT OF INDEMNITY FOR UNQUALIFIED PRACTICE.

To the Editor of THE LANCET.

SIR,—I notice among the correspondence recently appearing in your paper relative to the above Act that its authenticity is questioned. Further, that information is desired as to whether the document at New Romney is a copy of the Statute or a proclamation. The document in question is undoubtedly authentic, having been found among a bundle of proclamations, dating from Henry VII.'s reign to the eighteenth century. In itself it is one of the many regular printed proclamations of the time, presumably sent down to the town from London, in the ordinary custom of those times.

That these valuable proclamations have been preserved is due to the care which successive town clerks of New Romney have given to the documents in their charge.

I am, Sir, yours faithfully,

M. TEICHMAN-DERVILLE (Major).

Littlestone, New Romney, Kent, Jan. 3rd, 1929.

PROGNOSIS IN UNOPERATED CASES OF EXOPHTHALMIC GOITRE,

INCLUDING TOXIC ADENOMA.

To the Editor of THE LANCET.

SIR,—May I ask for information from those surgeons and physicians who have treated many cases of Graves's disease on the question of prognosis in cases where the patient declines operation? To avoid confusion these cases may be divided into the following two classes: (*a*) primary Graves' (diffusely enlarged vascular thyroid with hyperplasia); and (*b*) secondary Graves' (including toxic adenoma and cases following simple goitre). The patient (usually female) is not interested in percentages of deaths and recoveries. What she wants to know is the prognosis, without operation, in her individual case.

The points, on which I should be grateful for information, distinguishing between (*a*) primary and (*b*) secondary Graves's disease are: (1) Is it possible to give a correct prognosis as to what will happen in the individual case which is not operated upon? 2. If this is possible, what are the signs and symptoms on which the prognosis should be based?

I am, Sir, yours faithfully,

C. HAMILTON WHITEFORD.

Plymouth, Dec. 28th, 1928.

OSLER AS EPIDEMIOLOGIST.

To the Editor of THE LANCET.

SIR,—The statement on page 1222 in THE LANCET of Dec. 8th, 1928, made at a meeting of the Osler Club last July, "when Osler was professor of medicine at Harvard," should, of course, be "when Osler was professor of medicine at Johns Hopkins University." That the statement is merely a slip on the part of the speaker is shown by the immediate reference to Baltimore. That Osler could have gone in 1909 to Boston as medical adviser of the then new hospital on the Peter Bent Brigham Foundation is a well-known fact among his friends.[1]

The following incident has never appeared in print, and may be put on record in this connexion: In January, 1894, I was editing the *International Medical Magazine*, started as a companion monthly to the quarterly *International Clinics*, of which the 152nd volume has just been gotten out under my editorship, and I decided to report for its pages [2] a special meeting of the College of Physicians of Philadelphia called for Jan. 12th, 1894, with the object of discussing the subject of the proposed action of the Board of Health of Philadelphia in reference to the registration of patients suffering from tuberculosis. In the innocence of my then young medical life I invited the professor of bacteriology in the Woman's Medical College of Philadelphia and a few medical students of my class in pathology at the University of Pennsylvania to attend the meeting, and such was the fame of the former clinical professor of medicine in that institution of learning, then at Johns Hopkins University in Baltimore, that instead of a few students—the invitation had been passed on from mouth to mouth—they seemed like the sands of the sea in number when I entered the room and found the one lone female, my assistant at St. Clement's Dispensary, and the students occupying all available seats, thus making many of the Fellows to stand. Dr. Weir Mitchell was in the chair, and on opening the meeting called the secretary to him and requested that he read from the by-laws the section covering the admission of strangers to the meetings of the College, which required that this be done by a viva voce introduction at the time of the meeting. The professor was properly introduced by name, and "some medical students" covered the remainder, some of whom by this time having seen the propriety of surrendering their seats to Fellows. I can still recall the consolation which I got out of Osler's evident enjoyment of the, to me, embarrassing situation.

At this meeting Osler was one of the few physicians present advocating the making of the reporting of all open cases of tuberculosis mandatory, but the resolution of the Council of the College that this should not be done, was passed. At the time Dr. Osler kindly sent me the following outline of his remarks for publication[3]:—

First.—Following a primary law of parasitism, the bacillus tuberculosis frequents chiefly that organ in its host which communicates most freely with the exterior. Just as countless thousands of ova are thrown off from the intestine of the bearer of a tapeworm, so from tuberculous lungs in a state of softening and cavity-formation, countless millions of bacilli are cast out daily with the sputum.

Second.—The widespread diffusion of the parasite outside of the body has been demonstrated in the infectiveness of the dust and of the scrapings of the walls of rooms and wards occupied by patients with pulmonary consumption. Moreover, the greater prevalence of tuberculosis in crowded communities, the enormous mortality from the disease in prisons and institutions, and its frequent occurrence as a house malady, suggest that the conditions favouring its continuance are those which foster the growth and spread of a specific contagion.

Third.—In the language of parasitology the lungs constitute the chief seat of election. But, apart also from gross pulmonary lesions, the proportion of autopsies in which the bronchial glands are found tuberculous speaks unmistakably for direct infection in the existence of their function as dust filters.

On these grounds I believe that the registration of pulmonary tuberculosis would be beneficial—enforcing attention to those sanitary details so apt to be slighted or overlooked, and diminishing directly the danger of contagion in the community.

Infection through food is closely related also to the endemic prevalence of tuberculosis. The incidence of the disease in the mesenteric glands of infants indicates that the gastro-intestinal canal is a portal of infection only a little less wide than that of the respiratory tract.

The question of tuberculosis is not, however, settled with the disinfection of the sputa of consumptives.

The hereditary transmission of the disease must be accepted, though an estimate of the frequency of this mode of infection must necessarily be uncertain, but for certain forms Baumgarten's theory of latency is particularly suggestive. Tuberculosis has been well called the *pébrine* of the human race. The analogy is striking, for not only, as you will remember, is the parasite of the silkworm disease transmitted by direct contagion, but it also infects the eggs, which hatch, and may pass through various stages of development before they are finally destroyed.

Lastly, and here is consolation, the conditions which render individuals more or less immune scarcely yield in importance to those which maintain the vitality of the tubercle bacilli in a community. So widespread is the disease that few of us escape infection,[4] and the statistics of the Paris morgue show that in more than 50 per cent. of adults the germs not only gain an entrance, but actually effect a lodgment. As a factor in tuberculosis, the *soil*, then, has a value equal almost to that which relates to the *seed*, and in taking measures to limit the diffusion of the parasite let us not forget the importance to the possible host of combating inherited weakness, of removing acquired debility, and of maintaining the nutrition at a standard of aggressive activity.

And it is to be remembered that this was written by Osler 35 years ago, within 12 years after the discovery of the tubercle bacillus by Koch.

I am, Sir, yours faithfully,

HENRY W. CATTELL.

Cookstown, N.J., U.S.A., Dec. 23rd, 1928.

[1] Cushing: Life of Sir William Osler, vol. iii., p. 178.
[2] Vol. iii., p. 118.
[3] Loc. cit., pp. 123–4.

THE AIR TRANSPORT OF INVALIDS.

To the Editor of THE LANCET.

SIR,—It may be of general interest to the medical profession to know of the facilities offered by air transport to patients travelling abroad, who by reason of their state of health are unable to stand the strain by the ordinary boat and train routes. In the past we have carried several invalids, including stretcher cases, to various destinations, either on scheduled services or by specially chartered aircraft; in the most recent of these cases we have received a letter from the husband of the patient, who has given us permission to use it in the interest of others, who, no doubt, would like to consider this mode of travel, should they feel that the longer journey by train and boat presents insuperable difficulties. In the particular case under review the patient was suffering from a spinal complaint and was proceeding to a sanatorium at Leysin in Switzerland. The journey was undertaken in the company of her husband and nurse, a bed being provided in the forward portion of the cabin, thus causing no inconvenience to the ordinary passengers on board. The party was carried on an ordinary service aircraft, an additional fare being charged for the patient owing to the extra floor space occupied, the actual flying times being: Depart Croydon, 08.00; arrive Paris, 10.20; depart Paris, 11.10; arrive Basle, 13.58; 485 miles, as against 14 hours, 560 miles by boat and train, quickest route. As there was no aerodrome suitable in the vicinity of Leysin a connexion from Basle was made in a saloon car, in which the patient again travelled in a prone position. Refreshments were supplied en route and at Paris the privacy of the machine was secured for the patient, so that the nurse could attend to her.

From a subsequent conversation we had with the manager of the agency, who dealt with the inquiry in

[4] Osler himself at various times had anatomical warts from the making of autopsies.

the original instance, it is understood that the husband was of the opinion that the comfort and ease of the journey was far superior to that of the alternative routes and that the slight jarring caused when the aeroplane was taking off and landing, although quite perceptible, was never likely to cause any injurious discomfort to the patient.

We are, Sir, yours faithfully,

IMPERIAL AIRWAYS, LIMITED.

Airways House, Charles-street, S.W., Jan. 1st, 1929.

THE ASTHMA RESEARCH COUNCIL.

To the Editor of THE LANCET.

SIR,—In view of statements which have recently appeared in the press to the effect that a "certain cure" for asthma has been found, we, the undersigned, desire to place on record that there is no such "cure" known to medical science and that there is not any one form of treatment which is effective in all cases of asthma.

Investigations are being made under the auspices of the Asthma Research Council and with the approval and support of the Medical Research Council and the Ministry of Health into the mysteries of this distressing complaint which, it is hoped, will lead to a better knowledge of its origin and to the discovery of improved methods of prevention and treatment.

We hope that all interested in the subject, and especially well-to-do sufferers, will give their moral and financial support to the campaign, which will be inaugurated by the Lord Mayor of London at the Mansion House on Jan. 15th, for a national fund to provide research centres at several of the leading London and provincial hospitals, where asthma and its allied diseases will be scientifically and exhaustively investigated. Donations and offers of assistance should be sent to Sir Albert Stern, K.B.E., C.M.G., Hon. Treasurer, Asthma Research Council, London Clinic, Ranelagh-road, London, S.W. 1.

We are, Sir, yours faithfully,

HUMPHRY ROLLESTON,
DAWSON OF PENN,
ARTHUR F. HURST,
F. E. FREMANTLE.

Jan. 11th, 1929.

THE GRANULES OF THE TUBERCLE BACILLUS.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 29th, 1928, under the above heading, when you favour me by making some criticisms upon my book[1] upon the tubercle virus, you make a mistake which is of importance when you say that the photomicrographs reproduced there were taken with 1/18th immersion lens. These photomicrographs have been taken direct, no enlargements whatever, with the "Davon super microscope"[2] and they are all at a magnification of × 4000 and × 5000, and so far as I am aware they are the first to be published in any book. These have the great advantage that from a morphological point of view they are more reliable than others, and they are therefore worthy of the especial notice of research workers.

I am, Sir, yours faithfully,

WM. C. MINCHIN.

Quarry-road, Hastings, Jan. 4th, 1929.

[1] Study in Tubercle Virus. London: Baillière, Tindall, and Cox.
[2] Messrs. Davidson and Co., Great Portland-street, London.

"HEALTH COLUMNS" IN THE PUBLIC PRESS.

To the Editor of THE LANCET.

SIR,—Where is this promiscuous medical advice in the "health columns" of various journals going to end? In the current number of a certain magazine an amazing amount of advice is given to correspondents which is far beyond the scope of diagnosis and treatment by correspondence. One reader is advised to get treatment, "such as injection of a polyvalent vaccine of staphylococci-streptococci and *Micrococcus catarrhalis*." Another is told to ask her doctor if she might have a course of about twelve injections of arsenic and manganese. A further inquirer is told to ask for injections of glycerophosphates! These are only a few samples of the variety of advice and prescriptions which are proferred. It seems to me that the medical profession should take steps to limit this wanton dealing out of so-called medical help.

I am, Sir, yours faithfully,

HAROLD LONG.

Stormont-road, Highgate, N., Jan. 4th, 1929.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

LOCAL GOVERNMENT BILL.

(*Concluded from p. 52 of last issue.*)

Exemption of Maternity Homes.

Miss BONDFIELD then moved an amendment to remove maternity homes from the operation of the clause, and particularly from the operation of the uniform enforcement of the provision which had just been discussed. She said that the work in connexion with maternal mortality was still in an experimental stage, and anything which shook the present position was bound to act to the detriment of the service. For instance, the psychological effect of making a provision so that the operation of the financial arrangements in regard to municipal maternity centres were on precisely the same lines as those of the poor-law would be a deterrent so far as a great many women were concerned.

Sir KINGSLEY WOOD said that while he agreed as to the importance of making due provision for maternity, and encouraging as many mothers as possible to enter maternity homes, if Miss Bondfield thought that under this clause they were swopping horses and altering the present practice she was greatly mistaken. The provision which was being inserted in the clause generally was already the invariable practice so far as maternity homes, both municipal and voluntary, in this country were concerned. The clause, so far from making any alteration, really set out what was the universal practice of the voluntary maternity hospitals and homes to require that inmates or their relatives should pay what they could for the service. Some 60 or 70 municipal maternity homes recovered appropriate contributions unless they were satisfied, having regard to the circumstances of the inmate, that nothing could be paid. Therefore, there was no ground for saying that there was any alteration in the practice, or for anyone being frightened away from the maternity homes of the country by the application of this clause.

Replying to further debate, Mr. CHAMBERLAIN said that they were faced with the fact that there was not a sufficient number of maternity homes. They wanted more to be provided, but there would be still greater difficulty in getting local authorities to build more maternity homes in future if they were faced with the prospect that when they had built them they were going to be a heavy charge on them because the authority would not be able to recover expenses from patients.

The amendment was negatived by 250 votes to 145.

Definition of Infectious Disease.

Mr. RENNIE SMITH moved an amendment providing that the term "infectious disease" in the clause should be declared to include tuberculous and venereal disease.

Sir KINGSLEY WOOD said that the Ministry had placed the amendment before their legal advisers, and they had stated that both tuberculosis and venereal disease could be regarded as coming within the meaning of the clause relating to infectious diseases, and that the amendment was therefore unnecessary.

Dr. VERNON DAVIES said that the Ministry of Health was taking a rather important step. If they were to say that the term infectious diseases was to include, in all cases, tuberculosis and venereal disease, how were they going to keep out infantile paralysis, encephalitis lethargica, and influenza?

The Chairman pointed out that the Minister had merely stated that these words as a matter of definition would include certain complaints.

Sir H. SLESSER said that there was no definition at all of infectious disease in the Bill. Sir Kingsley Wood had said that he was advised the the term infectious disease included tuberculosis. The position was very unsatisfactory. He wanted to know where the Committee stood in the matter of definition. Was there no Act that defined infectious disease? If so, the Bill ought to be redrafted so as to say that the words "infectious disease" here had the meaning attached to them in some other Act. Or did the right hon. gentleman mean that as a question of medical fact infectious disease included these particular things?

Sir T. INSKIP (Attorney-General) said that the Committee never needed legal arguments if a little common sense would solve the problem. Fortunately, most of them understood the English language, and the words "infectious disease" were not a term which lawyers used and which required an interpretation Act. They were words which meant that a disease was infectious and, that so long as people suffering from it were at large, might result in injury to other persons. The result was that people who suffered from what were, in fact, infectious diseases were required in the public interest to go into an institution for treatment. The question was, what were in fact infectious diseases? Everyone agreed that tuberculosis and venereal diseases were, in fact, infectious diseases. Then the question was as to whether some other diseases were not infectious diseases. They would not arrive at a solution of this question merely by putting in the words "tuberculosis and venereal disease," because by including some words they tended to exclude others. It was better to leave the question of what was an infectious disease to be solved by proper evidence of fact, if ever such a question arose; and he had very little doubt that those questions of fact would be solved by the common sense of the doctors and authorities without any necessity to resort to a court of law.

Lieut.-Colonel FREMANTLE said that he dissented from the reading which the Attorney-General had just given. He could foresee his colleagues of the medical profession having to administer this measure, and they must know what cases they were dealing with, and what cases they were not dealing with under it. In the ordinary terminology of public health, the phrase "infectious disease" had a definite meaning. It was defined by an Order of the Ministry of Health interpreting certain Acts of Parliament in relation to infectious diseases. There was a specific catalogue of the diseases which were included in this definition. It was easy to administer a measure of this kind on those lines, but if his hon. and learned friend had the good fortune to belong to the medical instead of the legal profession, and if he, as a medical officer, had to try to work the administration of Acts relating to infectious diseases on the lines which he himself had suggested, he would find it an impossible task. They must have it laid down what diseases were to be regarded as infectious diseases. For practical purposes, venereal disease was not called an infectious disease, and certainly nobody had ever suggested that cancer was an infectious disease. He (Colonel Fremantle) suggested that the Minister of Health might reconsider this question in order to insert in the definition clause something defining the words "infectious disease" as being definitely associated with the term as generally interpreted in other Acts.

Sir KINGSLEY WOOD, after further discussion, said it was not a question of his own opinion but of fact as to whether a disease was infectious or not. If his own opinion was of any value he should say certainly tuberculosis would be included, but that was only his opinion. The advice given to the Department was that the amendment was unnecessary.

The amendment was negatived by 258 votes to 145. Under the guillotine resolution the clause was agreed to by 270 votes to 147. Clauses 18 to 27 in Part II. of the Bill were afterwards agreed to on a division under the guillotine, without discussion. Clause 18 provides for the transfer of the functions of the guardians under the Registration Acts to the county councils and county borough councils. Clause 21 provides that the councils shall prepare schemes for the administration of the Registration Acts, and Clause 23 amends the law in regard to the method of giving information of birth or death. Clause 24 applies this part of the Act to London with certain modifications. In Part III. of the Bill, Clause 26 deals with roads and town planning. After Clause 28 had been passed, dealing with the transfer of classified roads in urban districts to the county council, the Committee stage was adjourned until the following day.

Medical News.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were successful:—

M.D.

Branch I. (Medicine.)—Susanna M. Bernard and Kathleen M. Bowman Manifold, London (R.F.H.) School of Medicine for Women; J. W. Brown, Middlesex Hosp.; W. F. Gaisford, St. Bart.'s Hosp.; Lazarus Hartston, London Hosp.; *Horace Joules, Middlesex Hosp.; Maurice Mitman, Guy's Hosp.; H. S. Morley, Univ. Coll. Hosp.; Marie Pedersen, and Muriel F. Prout, London (R.F.H.) School of Medicine for Women; W. E. Rees, St. Thomas's Hosp.; B. B. Sharp, St. Bart.'s Hosp.; A. S. Wesson, Univ. Coll. Hosp.; and W. S. Whimster, Guy's Hosp.

* University Medal.

Branch IV. (Midwifery and Diseases of Women.)—R. K. Ford, London Hosp.; M. E. MacD. Jago, Guy's Hosp.; Lucy Parker, London (R.F.H.) School of Medicine for Women; and H. W. Parrott, London Hosp.

Branch VI. (Tropical Medicine.)—A. N. Kingsbury, Middlesex Hosp. and London School of Tropical Medicine; and J. N. Leitch, St. Bart.'s Hosp. and London School of Tropical Medicine.

At a meeting of the Senate on Dec. 19th, 1928, it was resolved to institute a university chair of anatomy tenable at St. Thomas's Hospital Medical School.

The degree of Ph.D. (Biochemistry) was conferred on William James Griffiths, of St. Thomas's Hospital, for a thesis on Gastric Secretion.

Forthcoming Lectures.—The following lectures will be delivered, unless otherwise stated, at University College, Gower-street, London: Three on the Hygiene of the Mercantile Marine, by Dr. J. Howard-Jones, M.O.H. for Newport, at 5.30 P.M. on Fridays, Feb. 22nd and March 1st and 8th; three on the Properties of, and Methods of Estimating, some Therapeutic Agents, by Dr. J. H. Burn, at 5 P.M. on Feb. 27th and 28th, and March 1st; six, with demonstrations, on Cytology in Relation to Physiological Processes, by Dr. R. J. Ludford, at 5 P.M. on Thursdays from Jan. 24th to Feb. 28th; three on Fatigue, by Dr. G. P. Crowden, at 5 P.M. on Mondays, Jan. 14th, 21st, and 28th; six on the Physiology of Reproduction, by Mr. A. S. Parkes, D.Sc., at 5 P.M. on Wednesdays, Jan. 16th to Feb. 20th; ten on Comparative Physiology, by Mr. C. F. Pantin, at 5 P.M. on Fridays, Jan. 18th to March 22nd; three (in English) on Some Questions of Tropical and Local Helminthology, by Prof. F. Fülleborn, of Hamburg, at 5.30 P.M. on March 11th, 12th, and 13th, at the London School of Hygiene and Tropical Medicine; and three on the Eye in General Medicine, by Dr. A. Maitland Ramsay, at 5.30 P.M. on March 4th, 6th, and 8th, at University College Medical School.

A course of public lectures on the Current Work of the Biometric and Eugenics Laboratories will be given at University College at 5.30 P.M. on Tuesdays, from Jan. 29th to March 5th. The lecturers will be Prof. Karl Pearson, F.R.S., Dr. Julia Bell, Mr. G. M. Morant, D.Sc., Miss Ethel Elderton, and Dr. Percy Stocks. The lectures will be open to the public without fee.

ROYAL MICROSCOPICAL SOCIETY.—The annual meeting of this society will be held in the Lecture Hall at 20, Hanover-square, London, W., on Wednesday, Jan. 16th, at 7.45 for 8 P.M., when Mr. Joseph Barnard, F.R.S., will deliver a presidential address on Some Aspects of Ultra-Violet Microscopy.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.—At 18, John-street, Adelphi, London, W.C., on Tuesday, Jan. 15th, at 8.15 P.M., Mr. Roger Fry will lecture on Representation in Art.

COMMITTEE ON OCCUPATIONAL DISEASES.—The fourth meeting of the Permanent International Committee on Occupational Diseases will open at Lyons on April 3rd. The chief subjects of discussion will be Silicosis, Cataract of Occupational Origin, and the Endocrine System and Poisonings. Those desirous of taking part in the meeting must be introduced by a titular member of the committee or by the executive or the Organising Committee. The secretary is Dr. Mazel, 54, avenue de Noailles, Lyons.

ASTLEY-AINSLIE INSTITUTION.—The governors of this Edinburgh institution have appointed Lieut.-Colonel John Cunningham, I.M.S., to be its medical superintendent. Colonel Cunningham, who is a son of the late Prof. D. J. Cunningham, professor of anatomy in the University of Edinburgh, graduated M.B. Dub. in 1904, and is at present director of the King Institute of Preventive Medicine, Guindy, Madras. He was formerly assistant director of Central Research Institute, Kasauli. He has contributed various articles on clinical medicine to medical publications. He will take up his duties in the spring of this year, when the extended buildings will be completed.

THE death is announced of Dr. Maurice E. J. L. Letulle, sometime professor of clinical medicine in the University of Paris, at the age of 75. Prof. Letulle had been a member of the Academy of Medicine since 1908, and was the author of several standard works on pathological and clinical subjects.

OPTICAL SOCIETY.—A meeting of this society will be held at the Imperial College of Science and Technology, South Kensington, at 7.30 P.M., on Thursday, Jan. 17th, when a paper on the Function of the Lens Capsule in the Accommodation of the Eye will be read by Mr. E. F. Fincham, and papers on a Double Reflexion Level and Photographs of Reflexion Caustics by other members.

SOCIETY OF M.O.H.'S AND MEDICO-LEGAL SOCIETY. A joint meeting of the Medico-Legal Society and the Maternity and Child Welfare Group of the Society of Medical Officers of Health will be held at 8.30 P.M. on Thursday, Jan. 24th, at 11, Chandos-street, London, W., with Sir William Willcox, president of the Medico-Legal Society, in the chair. A discussion on Criminal Abortion and Measures Necessary to Restrict the Sale of Abortifacient Drugs will be opened by Dr. F. J. McCann, Dr. R. A. Lyster, Sir Bernard Spilsbury, Mr. H. Beckwith Whitehouse, and Mr. H. D. Roome. Members of either Society may introduce guests to the meeting.

POST-GRADUATE COURSES AT ROYAL NORTHERN HOSPITAL.—As announced last week a series of courses on special subjects will begin at this hospital on Jan. 28th. The first course on Gastro-enterology starts on this date, and during the subsequent fortnight 14 lectures will be devoted to the medical, surgical, radiological, and pathological aspects of the subject. It will be treated primarily from the standpoint of the practitioner. Applications, together with the fee of £2 2s., should be lodged with the Secretary of the hospital (Holloway-road, London, N. 7), not later than Jan. 21st. If there are less than six applicants applying no course will be held. Detailed programmes of this and other courses may be had from the Dean.

ORLER OF ST. JOHN OF JERUSALEM.—The following promotions and appointments have been made: Colonel Sir James R. A. Clark, Bailiff Grand Cross, from Knight of Justice; Colonel J. A. Dick and Dr. C. C. Lavington, commanders; Major F. Howard Humphris, Dr. A. G. Osborn, Dr. W. E. Thomas, Lieut.-Colonel Sir George W. Badgerow, Sir Percival Horton-Smith Hartley, and Sir Wilfred T. Grenfell, officers; Dr. J. R. Summers Park, Dr. James Pirie, Dr. Charles H. Perram, Dr. H. J. Ley, Dr. J. A. MacKenzie, Dr. William Megaw, Dr. J. R. H. Dubourg, Dr. John Orr, Dr. William Arnott, Dr. A. Oliver Holbeche, Dr. Christopher Armstrong, and Dr. John M. Wilson, Serving Brothers; and Dr. Simon Simons, Associate Serving Brother.

UNIVERSITY OF GLASGOW.—Prof. Andrew Hunter, of Toronto, has been appointed to the Gardiner Chair of Physiological Chemistry, rendered vacant by the promotion of Prof. E. P. Cathcart to the Regius Chair of Physiology.

Graduating M.B. with first-class honours at the University of Edinburgh in 1901, Dr. Hunter carried out post-graduate work at Berlin and Heidelberg, and after working for a time in Edinburgh was appointed assistant professor of biological chemistry at Cornell University, U.S.A. Later he was appointed to the chair of biological chemistry in the University of Toronto. He is expected to take up residence in Glasgow early in the New Year. His colleague at Toronto, Prof. J. J. R. Macleod, F.R.S., was recently appointed to the Regius chair of physiology at Aberdeen.

PEOPLE'S LEAGUE OF HEALTH.—On Jan. 18th this League will begin a series of 12 Sims Woodhead health lectures. The lectures will be given weekly at the rooms of the Medical Society of London, 11, Chandos-street, W., at 6 P.M., the subjects and speakers being as follows:—Jan. 18th: The Need for a National Stocktaking, Mr. C. J. Bond; 25th: Bones, Muscles, and Internal Organs, Prof. H. E. Roaf; Feb. 1st: Glands, Circulatory, and Respiratory Systems, Prof. M. S. Pembrey, F.R.S.; 8th: Brain and Nervous System, Sir Robert Armstrong-Jones; 15th: Lymphatics, Lymphatic Glands, and Digestive System, Prof. B. Collingwood; 22nd: Nutrition and Protective Foods and Excretory System, Prof. V. H. Mottram; March 1st: Human Faculties, Dr. Thomas Beaton; 8th: Water, Air, Light and Ventilation, Dr. Leonard Hill, F.R.S.; 15th: Growth and Development of Mind and Body, Dr. R. D. Gillespie; 22nd: Youth, Adolescence, and Adult Life, Mr. Z. F. Willis; April 12th: Natural Capacity and Health in Relation to a Career, Sir Thomas Oliver; 19th: Decay and Disease, Natural and Premature, Dr. C. C. Worster-Drought. Full particulars may be had from the headquarters of the People's League of Health, 12, Stratford-place, London, W. 1.

THE death is announced of Miss Caroline Helen Keer, R.R.C., late matron-in-chief of Queen Alexandra's Imperial Military Nursing Service, at the age of 71. She was the second daughter of Major-General Keer and joined the Army Nursing Service in 1887.

VICTORIA INFIRMARY, GLASGOW.—A new departure in connexion with hospital treatment in Glasgow is contemplated by the governors of the Victoria Infirmary, who intend to erect an annexe to their establishment for the accommodation of paying patients. Costing about £25,000, the new structure will have accommodation for some 30 patients, but provision will be made for further extensions. Patients of the annexe will receive the same treatment as is given in the ordinary wards, and will be asked to pay six guineas per week, inclusive, for the first three weeks, and half that charge per week thereafter.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A new series of demonstrations will be given at the Wellcome Museum of Medical Science, 33, Gordon-street, London, W.C., on Wednesday, Jan. 16th, at 4.30 P.M., when Dr. Helen Mackay will speak on Some Recent Work on Rickets. No fee will be charged for this demonstration. A new series of lectures, entitled Pitfalls in Medicine and Surgery, will start on Monday, Jan. 21st, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, with a lecture by Dr. Robert Hutchison on Pitfalls in Diagnosis of Dyspepsia. The weekly demonstrations in medicine and surgery will be resumed shortly at the various London general and special hospitals. A full list of lectures and demonstrations for the next three months may be had on application. Two courses begin on Jan. 14th and continue for two weeks. These are an intensive course in cardiology at the National Hospital for Diseases of the Heart, and an all-day course at the Queen's Hospital for Children. From Jan. 28th to Feb. 9th an intensive course in medicine, surgery, and the specialties will take place at the Prince of Wales's General Hospital, Tottenham. On Tuesdays and Saturdays, at 11 A.M., from Jan. 29th to Feb. 23rd, a series of lecture-demonstrations in psychological medicine will be given at the Bethlem Royal Hospital by Dr. Porter Phillips and members of the staff. Copies of all syllabuses and information about the general course arranged by the Fellowship may be had from the Secretary at 1, Wimpole-street, W. 1.

THE death is reported of Dr. Johannes von Kries, for many years professor of physiology in the University of Freiburg in Breisgau. He was best known as a physiologist by his many interesting experiments to elucidate the phenomena of colour vision and by his studies on physiological optics. With his brother he worked in C. Ludwig's laboratory in Leipzig in the 'seventies. He devised ingenious direct experiments confirming and extending the observation of Arago that certain small stars, which are visible at the periphery of the retina by indirect vision, are not visible by direct vision—i.e., when their image falls on the fovea centralis. He extended the "duplicity theory" of Max Schultze, that the cones of the retina subserve light and colour perceptions, while the rods are concerned with the perceptions by light, but are incapable of initiating colour sensations. The observations of Parmaud and more especially those of von Kries gave a wider basis to Max Schultze's theory—founded on his classical microscopic observations—on the structure of the retina in 1866, as to the distribution of the rods and cones in the retina of man and animals. Von Kries assumed that the rods act as the receptors in scotopic or twilight vision, while the cones, particularly those of the fovea, are the organs of photopic visi on.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Jan. 15th.—5 P.M., MEDICINE. Dr. F. Parkes Weber: Endocrine Tumours. Dr. O. Leyton: How Can we Decide that a Case of Glycosuria should be Treated. The papers will be followed by discussions. 5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. 8 P.M., PATHOLOGY. Communications: H. Warren Crowe: The Experimental Production of Foci of Infection in Rabbits and its Bearing on Osteo-arthritis. B. J. W. Jervis and R. B. Bourdillon: Treatment of Experimental Anæmias with Ultra-violet Light. Demonstrations: W. G. Barnard: Secondary Carcinoma Infiltrating a Uterine Fibroid. W. D. Newcomb: Carcinoma of Small Intestine.

WEDNESDAY.—5 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Clinical Pathological Meeting.
THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Dr. J. H. T. Davies: (1) Pigmentation of the Face—for Classification. (2) Case for Diagnosis—? Fox-Fordyce Disease. Other cases will be shown.
FRIDAY.—8 P.M., PATHOLOGY, SURGERY, OBSTETRICS. Special Discussion on Post-operative Thrombosis. Openers: W. Howel Evans (Pathology), D. H. Patey (Surgery), Victor Bonney (Obstetrics). 8.30 P.M., ELECTRO-THERAPEUTICS. Papers: Mr. C. Thurstan Holland: Epiphyseal Injuries of the Wrist-joint. Dr. R. S. Patterson: Some Factors Influencing Epiphyseal Growth and Union.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Jan. 14th.—8 P.M., Pathological Evening.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, W.
THURSDAY, Jan. 17th.—8.15 P.M., Mr. Edward Hindle, Ph.D.: An Experimental Study of Yellow Fever. Chairman: Prof. J. W. W. Stephens, F.R.S. (Preceded at 7.45 P.M. by a demonstration of microscope slides and specimens to illustrate the subject.)

CHELSEA CLINICAL SOCIETY.
TUESDAY, Jan. 15th.—8.30 P.M., at St. George's Hospital. The following will show cases or specimens: Mr. L. Abel, Mr. Ivor Back, Dr. H. MacCormac, Dr. J. Moore, Dr. Orlianski, and Dr. C. Sundell.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Jan. 14th, to SATURDAY, Jan. 19th.—WELLCOME MUSEUM OF MEDICAL SCIENCE, 33, Gordon-street, W.C. Wed., at 4.30 P.M., Dr. Helen Mackay: Some Recent Work with Regard to Rickets. No fee. NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. Intensive Course in Cardiology, lasting two weeks. QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E. All-day Course for two weeks. Further information from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Jan. 14th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Ear, Nose and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Jan. 15th.—5 P.M., Dr. A. C. Roxburgh: Eruptions Due to Physical Causes.
THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Ringworm Infections.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, Jan. 14th.—1.30 P.M.: Methods of Examination and Diagnosis Courses. Mouth and Pharynx.
WEDNESDAY.—1.30 P.M.: Larynx.
FRIDAY.—4 P.M., Dr. Dan McKenzie: Early Mastoid Operations.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Jan. 15th.—3.15 P.M., Dr. A. Lisle Punch: Demonstration of Chest Cases.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE, Manchester.
FRIDAY, Jan. 18th.—4.30 P.M. (at the Whitworth-street West Branch), Dr. Lacey: Ante-partum Hæmorrhage.

SHEFFIELD UNIVERSITY POST-GRADUATE CLINICS.
FRIDAY, Jan. 18th.—3.30 P.M. (at the Royal Hospital), Prof. Hall: Clinical Cases.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150
Brighton, Royal Sussex County Hospital.—Jun. Asst. Pathologist. £250. Also Hon. Medical Clinical Asst. Also H.S. £150.
Cape Town University.—Asst. in Pathological Chemistry. £800.
Cardiff City Mental Hospital, Whitchurch, near Cardiff.—Med. Supt. £1000.
Cardiff, Royal Infirmary.—Three H.S.'s. Also Three H.P.'s. Each at the rate of £50.
Chester, Royal Infirmary.—Third Hon. Surgeon.
Exeter City Mental Hospital.—Asst. M.O. £350.
Exeter, Royal Devon and Exeter Hospital.—H.S. Also Asst. H.S. At rate of £130 and £100 respectively.
Great Yarmouth, General Hospital.—H.S. £150.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300. Also Anæsthetist. 15 gns.
Ilford Emergency Hospital, Ilford, Essex.—Jun. H.S. £100.
Leicester Royal Infirmary.—Surgical Dresser. 10s. 6d. weekly.
Leigh Infirmary, Lancashire.—Res. H.S. At rate of £150.
Liverpool, Royal Liverpool Children's Hospital, Myrtle-street.—Res. Cas. O. £120. Also Two Res. H.P.'s and Two Res. H.S.'s. Each at rate of £60. Also Res. M.O. for Heswall Branch. At rate of £120.
L.C.C., Mental Hospital Service.—Eighth Asst. M.O. £300.
London Hospital, E.—Dental Anæsthetist.
London Temperance Hospital, Hampstead-road, N.W.—Med. Reg. 40 guineas.
Malayan Medical Service.—Medical Officers. £700 per annum.
Manchester, Ancoats Hospital.—Res. M.O. £150.
Manchester, St. Mary's Hospitals.—Four H.S.'s. Each at rate of £50.
Marseilles, Queen Alexandra Memorial Hospital.—Res. M.O. At rate of £150.
Northampton General Hospital.—Hon. Pathologist.
Nottingham, City Mental Hospital.—Jun. Asst. M.O. £350.
Oldham, Royal Infirmary.—H.S. At rate of £175.
Paddington Green Children's Hospital, W.—Two Hon. Surgeons.
Portsmouth, Royal Portsmouth Hospital.—Cas. O. At rate of £100.
Princess Louise Kensington Hospital for Children, N. Kensington. H.S. At rate of £75.
Queen's Hospital for Children, Hackney-road, E.—Asst. Surg.
Reading, Royal Berkshire Hospital.—Hon. Asst. Physician.
Rochdale Infirmary and Dispensary.—Jun. H.S. £175.
Royal Army Medical Corps.—Twenty-five Commissions. £500 to £2000.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.
St. Marylebone General Dispensary, 30, Marylebone-lane, W.—Clin. Asst. in Ultra-violet Radiation Department.
Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.
South-Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. Honorarium £75.
Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Hon. Asst. Physician.
Wallasey, Victoria Central Hospital.—Jun. H.S. £100.
West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.—Sen. H.P. Also Jun. H.P. At rate of £150 and £100 respectively.
West London Hospital, Hammersmith-road, W.—Aural and Ophth. H.S. and Res. Asst. Cas. O. At rate of £100.
Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.—Anæsthetist. £200. Also Specialist Consultants. Special Fees.
Willesden General Hospital.—Clinical Assistants.
Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Roade (Northants) and at Lockerbie (Dumfriesshire).

Births, Marriages, and Deaths.

BIRTHS.

LLOYD.—On Jan. 2nd, at Hereford-square, Kensington, the wife of Eric I. Lloyd, F.R.C.S., of a son.
OSBOURNE.—On Jan. 5th, at Watford, Herts, the wife of Denis Osbourne, M.B., Ch.B., of a daughter.
STRUTHERS.—On Jan. 2nd, the wife of J. A. Struthers, M.B., M.R.C.P., of Fortune Green-road, N.W., of a son.
VINES.—On Jan. 5th, at Wyndyate, Chalfont St. Peter, Bucks, the wife of H. W. C. Vines, M.D., of a son.

MARRIAGES.

KERLEY—MCNAMEE.—On Jan. 2nd, at University Church, Dublin, Dr. Peter Kerley, Weymouth-street, London, to Olivia McNamee, Enniskillen.
WALLACE—BEVINGTON.—On Jan. 1st, quietly in London, Lieut.-Colonel John Wallace, R.A.M.C.T., to Margaret Chieslie (Madge) Bevington.

DEATHS.

BOYS.—On Jan. 7th, at St. Peter's-street, St. Albans, Arthur Henry Boys, M.R.C.S., L.R.C.P., aged 77.
COOK.—On Jan. 1st, of pneumonia whilst on a visit to his son at Isleworth, Joseph B. Cook, M.R.C.S. Eng., L.R.C.P. Edin., of Parkdene, Great Missenden, Bucks, in his 81st year.
DOUGLAS.—On Dec. 31st, 1928, at Mundesley, Norfolk, Arthur McDonald Douglas, M.B., Ch.B., in his 31st year.
RUSSELL.—On Jan. 2nd, at St. Mawes, Wilfred Alan Russell, M.B. Camb., M.R.C.S., L.R.C.P., late R.A.M.C., of the Little House, Mayford, Surrey.
WRIGHT.—On Jan. 4th, at Lennox-mansions, Southsea, from pneumonia, John Lister Wright, M.R.C.S.E., L.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1928.

THE Index and Title-page to Vol. II., 1928, which was completed with the issue of Dec. 29th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Notes, Comments, and Abstracts.

IODINE IN RELATION TO GOITRE.*

By D. W. CARMALT-JONES, M.D. LOND., F.R.C.P. LOND.,

PROFESSOR OF SYSTEMATIC MEDICINE, UNIVERSITY OF OTAGO, NEW ZEALAND; CONSULTING PHYSICIAN, WESTMINSTER HOSPITAL.

PART I.

IODINE was discovered by Courtois in 1812. Its distribution in air, water, soil, food, and elsewhere was very fully worked out by Chatin between 1850 and 1860. This must have been very remarkable work, the quantities in which the element is present in most substances in Nature is exceedingly minute, and very accurate colour tests are required for its estimation, but in a recent survey by von Fellenberg, a Swiss chemist, Chatin's results were confirmed in almost all particulars. In all physiological and pathological relations a recognition of the minute quantity involved is essential to the comprehension and correct handling of the problems.

Iodine is constantly present in the mammalian thyroid gland. This was first demonstrated by Baumann in 1896, since when much study has been devoted to the association between the two. Oswald (1901) showed that it was present in the colloid portion, and a few years later (1909) Marine and Lenhart established a kind of corollary to this, and showed that the amount of iodine in any thyroid varied inversely with the amount of hyperplasia. Marine and Rogoff (1916), by perfusion experiments into a dog's vein, demonstrated the remarkable affinity of the thyroid for iodine. Fifty milligrammes of potassium iodide injected into a dog's vein increased the iodine content of the thyroid by several hundred per cent. within five minutes. It is highly probable that the internal secretion of the thyroid gland contains iodine, and in 1916 Kendall claimed to have isolated this hormone in crystalline form with an empirical formula showing the presence of iodine; he called this body "thyroxin." More recently Harrington has isolated another body which most physiologists are more willing to accept as representing the thyroid hormone. Iodine therefore appears to be an essential element in the internal secretion of the thyroid gland, and as such is essential to health, since the removal of the thyroid is followed by grave results to many vital processes. The thyroid gland is known to have many important functions, one of which is the control of the basal metabolic rate (B.M.R.). This is of great experimental importance, since the rate is capable of measurement. In myxœdematous patients and cretins, in whom the thyroid gland is either atrophied or hypoplastic and so contains little colloid or iodine, the B.M.R. is low, and in cases of Graves's disease, in which the thyroid is much enlarged and which can be successfully treated by partial removal of the gland, the B.M.R. is high. It is therefore assumed that in cretins the secretion of the iodine-containing thyroid hormone is inadequate, and in cases of Graves's disease it is excessive. Further, the B.M.R. is assumed to be a measure of the secretion of thyroxin. There are thus very good grounds for the view that the activity of the thyroid gland is essentially concerned with the metabolism of iodine.

If iodine is introduced into the circulation it is rapidly taken up by the thyroid, as Marine and Rogoff showed, and the total amount of iodine in the normal thyroid is estimated at between 1 and 2 mg. per gramme of dried substance, with a total of 25 mg. for the whole gland. The amount of iodine in the normal thyroid is thus about 0·1 per cent. of dried substance, and it is further estimated that 10 mg. of iodine must be ingested per annum to maintain this concentration. This supply must be derived from food and water, and the amount present in either of them is exceedingly minute. There is very little in meat, so that the amount in the circulating blood is likely to be very small. The point requires emphasis, because the whole problem of iodine in relation to goitre depends upon the extremely minute quantity of iodine which is commonly required and commonly available for the activities of the thyroid gland. This may be more fully grasped if a comparison is made between the physiological status of sodium chloride and that of iodine in the animal body, with a brief consideration of the development of the vertebrate mammal from the invertebrate marine animal.

The latter has an excretory system which communicates directly between the body cavity and the surrounding sea-water, consequently the saline constituents of the body fluid are identical with those of sea-water. Sea water contains 3·5 per cent. of salts, of which the great majority is sodium chloride, and 0·000002 parts per cent. of iodine, or, in the usual way of describing such minute amounts, 2 parts per 10^7. Vertebrate mammals, derived originally from marine invertebrates, retain a body fluid of similar saline constituents to those of sea-water, but diluted about five times: thus the sodium chloride content of the body fluid is about 0·75 per cent. If the same holds good of iodine, the content of the body fluid should be about 4 parts to 10^7. Whatever, therefore, the actual iodine content of the thyroid gland, the amount which it puts into circulation seems to be exceedingly minute. It is well known that land animals require sodium chloride, derived from some marine source, to be added to their food, and that it is a regular addition to the diet of civilised man. It is therefore easy to understand that if the essential minute amount of iodine is not present in natural food it must be deliberately added. The sea is not, however, the common source of iodine as it is of sodium chloride; in most countries an adequate amount is present in the soil, where it appears to be derived chiefly from igneous rocks. At the same time it is obtainable from the sea, and eaters of sea-fish, particularly of shell-fish, ingest iodine in relatively large amounts. Iodine is present in soil, from which it is taken up by vegetables, and it is from these that animals derive it. Animal food, whether milk or flesh, which has been raised on vegetables with a sufficient iodine content is itself a source of iodine. But the amounts actually present both in soil and food are exceedingly minute. The content of iodine in soils is measured in parts per 10 million (10^7), which is approximately the same as measuring the number of grains to the half ton. The unit of weight commonly employed is the microgramme (Gamma, γ), one-thousandth part of a milligramme, or one-millionth part of a gramme. There are about 60,000 γ to a grain. The iodine content of foodstuffs is measured in γ per kilo, which is the same as parts per 1000 million (10^9). The figures to be quoted are from papers by Hercus, Benson and Carter, and by Hercus and Roberts, and the observations were made on New Zealand material. The richest soil in New Zealand (Taranaki) contains 166 parts of iodine per 10^7, and the average content of various foodstuffs, not grown in Taranaki but in several non-endemic districts, is as follows:—

Root vegetables, without skin and unmanured	7	parts per 10^9.
Leafy vegetables, unmanured	24	
White flour	3	
Oatmeal	30	
Beef	13	
Mutton	10	

It is upon the iodine so derived that the thyroid depends for the 10 mg. or 10,000 γ which it requires annually, and which, it will be seen, involves an intake of about 200 γ a week, or about 30 γ a day.

Results of Living on a Soil Deficient in Iodine.

Briefly, it is assumed that the thyroid gland requires 30 γ of iodine daily for its hormone; this iodine it derives from the food, the iodine content of which depends on the presence of iodine in the soil. It is evident that if the soil of any district is deficient in iodine, then the animals which live in the district will be placed at a certain disadvantage in regard to the activities of their thyroid glands. The thyroids, so long as they remain healthy, will attempt to adapt themselves to the conditions in which they are placed, and if they fail to adapt themselves they will show symptoms of disease of one kind or another—that is to say, their functions will be disturbed either by way of excess or defect. It happens that this condition of deficient iodine in the soil is found in many districts in New Zealand, with the result that simple, or endemic, goitre is highly prevalent. This is to be regarded as the response of healthy thyroids to a particular physiological stress. The enlarged gland, however, is unusually vulnerable, and a proportion of the cases become "toxic"—i.e., show to excess the functions of thyroid action, among them an increased B.M.R. Others atrophy, either with or without a toxic period, and show defective thyroid action, up to complete myxœdema, with decreased B.M.R.

These observations were, of course, made in the reverse order from that just given. Goitre has long been observed in New Zealand, and it is only recently that deficiency of iodine in the soil has been recognised as its cause. This discovery is, in fact, the outcome of the most important piece of medical research yet done in the country. Whether the New Zealand results are applicable to other countries where goitre is prevalent I have no means of knowing, but iodine deficiency appears to be the essential cause of New Zealand goitre. Doubtless, with thyroids rendered sensitive by this

* Being the substance of a lecture delivered at the Institute of Pathology and Research at St. Mary's Hospital. Part II. will appear next week.

means, any of the other numerous causes of goitre may be particularly effective in individual cases. The relation of iodine deficiency in New Zealand has been established by the following steps. Goitre has been prevalent among New Zealand Maoris living in inland districts for as long as tradition goes back. Coastal Maoris, who were and are large fish-eaters, naturally escaped, but in 1925 Hercus found an incidence of 18 per cent. in the only inland tribe so far investigated, the Urewera. In the South Island of New Zealand serious European occupation began between 1840 and 1850, and in 1880 Dr. Hacon, the medical superintendent of the Christchurch Mental Hospital, found a considerable incidence of goitre among his patients and their attendants, and recorded the birth of a child with goitre, and the occurrence of Graves's disease. Hacon attempted to establish the prevalence of goitre throughout the country by means of a questionaire addressed to doctors—a disappointing method—but found at least that there was great variation in the incidence in different parts of the country, Canterbury being then, as now, the most affected district. He published his results in 1892. In 1910 Colquhoun published further observations on similar lines with a spot-map of affected areas. He consulted expert opinion as to the geological character of the districts, but nothing was at that time found which was common to the areas of goitre prevalence.

During the period of the Great War no less than 1500 men out of 130,000 examined were rejected for military service on account of goitre; of these, 1000 were in the Christchurch Military District. Meantime, the importance of iodine to the thyroid gland was gradually becoming established and, in 1916 Drennan, who was familiar with Marine's work, was appointed to the chair of pathology at Otago University. He was at once impressed with the prevalence of goitre as seen in the streets, the hospital, and the post-mortem room, and in 1919 he advised the assay of foodstuffs for iodine, since the conditions in New Zealand appeared to be closely similar to those described by Marine in the Great Lakes district of America. Marine had successfully treated by iodine trout with goitre, pigs born with goitre when the mothers' food was deficient in iodine, and school-girls with endemic goitre. Drennan had found in New Zealand goitrous trout, lambs born with goitre, and a high incidence of goitre among young people. Goitre is to be found in New Zealand among animals both domesticated and wild, among cattle, sheep, horses, and trout; the observations on animals are not yet complete.

The iodine factor in endemic goitre in New Zealand was first seriously investigated by Hercus, who returned to New Zealand after five years' absence during the war, and entered the Public Health Service, which includes the inspection of school-children. He was as impressed as every newcomer with the prevalence of the condition, which rouses little interest in the permanent resident, and he proceeded, with Dr. Eleanor Baker, to investigate the incidence among school-children in Canterbury and Westland. They obtained the remarkable figure of 60 per cent., most of it incipient. These observations were extended by Dr. Baker to the whole country, including some 90,000 persons, and gave a total of 34 per cent. for all children of school age. Great pains were taken by Dr. Baker to secure uniformity in the method of examination and estimation. Many of these juvenile goitres disappear, but it may be noted that many goitrous children have goitrous parents and siblings, and that in the Christchurch Maternity Hospital some 60 per cent. of the mothers are goitrous and 8 per cent. of the babies born have goitre.

There are many supposed causes of endemic goitre, but the only one which Hercus could find applicable to the condition as it occurs in New Zealand is deficiency of iodine in the soil. His attention was first drawn to this as a probable cause by observations made in Canterbury, in the city of Christchurch, and the neighbouring port of Lyttelton, in both of which the water-supply is artesian. The goitre incidence among school-children in Christchurch was 64 per cent., whereas in Lyttelton it was 20 per cent. lower. The Lyttelton water-supply is slightly contaminated with sea-water, and it occurred to Hercus that the trace of iodine so introduced might be responsible for the difference in the goitre incidence, and that in this case the soil was likely to be of greater importance than the water-supply as a source of iodine. This led ultimately to an investigation of the iodine in the soil of the districts throughout the country, together with a record of the goitre incidence in the school-children in the same areas.

INQUESTS IN MANCHESTER.—The number of deaths reported to the city coroner of Manchester in 1928 was 1296, as against 1274 in 1927. 473 inquests have been held, compared with 546 in 1927, the decrease being due to the Coroner's Amendment Act. Under the old Act 612 inquests would have been necessary.

NORTON THE ALCHEMIST.

TRADITION places the beginning of chemical study in Europe in 1141, when Robert of Chester completed his translation from the Arabic of the "Book of the Composition of Alchemy." This science lent itself more than most to knavery, magic, and occultism; but there were honest men among its exponents, and among them we must place Thomas Norton of Bristol.[1] He seems to have been a pupil of G. Ripley, and medical students of to-day, struggling to acquire the rudiments of chemistry, may be heartened to know that Norton apparently learnt the whole science of alchemy in 40 days.

On his return to Bristol, stuffed with alchemical learning, the poor man had no luck. After an auspicious start in which he actually prepared the elixir of gold, he was chagrined at having it stolen by a dishonest servant. He next tried for the elixir of life, which, when prepared, he was most unfortunate in having stolen by a merchant's wife. The latter has been stated, on insufficient evidence, to be the wife of that William Canynges who rebuilt St. Mary Redcliffe. If this be so we can surely pardon the theft, annoying as it must have been to Norton, for as a memorial we have the most glorious parish church in England.

The authorship of the Ordinall is revealed by a curious acrostic; from the first word of the Proeme and the "initiall letters" of the six following chapters we get, with the first line of the seventh chapter, the following lines:—

TO-MAIS-NOR-TON-OF-BRISE-TO
A Parfet Master ye maie him call trowe.

The date of the manuscript is 1477. It has been very well reproduced here, both as to printing and illustrations, and can be commended to all who are interested in an out-of-the-way subject, and quaint diction. We are inclined to wonder whether Butler, in writing "Hudibras," had the Ordinall in mind when he wrote—

"Many rare pithy saws concerning
the worth of astrologic learning."

ACUTE CONGESTION AND ŒDEMA OF THE LUNGS.

ACTIVE congestion of the lungs is regarded by French authors as a primary condition, and is called by them the *maladie de Woillez*. In England and America, on the other hand, it is looked upon as symptomatic, and secondary to cardiac and pulmonary affections. The congestion may be generalised, as, for instance, in some types of cardiac disease or following the inhalation of irritating gases. Local or collateral congestion is seen in many pulmonary diseases such as pneumonia, pleurisy, bronchitis, and tuberculosis—the capillaries in the areas adjacent to the lesions being engorged and distended. As Osler points out, the symptoms of active pulmonary congestion are indefinite and difficult to distinguish from the anomalous or larval forms of pneumonia. The condition is fairly common, especially in children, in whom the only symptoms may be cough and fever persisting for a few days, with physical signs at one of the bases of the lungs of slight impairment of percussion note, distant breath sounds, and a few fine distant inspiratory crepitations. A radiogram of the chest shows at one base, and occasionally at the apex, a characteristic diffuse shadow which clears up as a rule in about one month from the onset. As the illness is usually very mild, the cases rarely, if ever, come to autopsy, and for this reason it is likely that the exact nature of the lesion will remain a subject for controversy.

Dr. G. Caussade and Dr. André Tardieu [2] have made an attempt, by clinical and histological examination of the sputum and lung fluid (withdrawn by exploratory puncture), to obtain some definite evidence by which Woillez's disease may be distinguished from the larval forms of pneumonia. With this in view they studied the symptoms, physical signs, and clinical course of three patients said to be suffering from it, and also carried out careful radiological, chemical, and histological investigations. The clinical pictures of the first two cases described resemble that of atypical lobar pneumonia, but the results of the microscopical and chemical examination of the sputum put the cases, in the author's opinion, definitely into the category of Woillez's disease. The greater part of the microscopic fields, after the specimens had been fixed with dilute chromic acid and stained with Unna's blue, were seen to consist largely of closely packed sero-albuminous droplets, with a few alveolar epithelial cells, polymorphs, streptococci, pneumococci, *Micrococcus catarrhalis*, and *M. tetragenus*

[1] The Ordinall of Alchimy, written by Thomas Norton of Bristoll. Being a facsimile reproduction from Theatrum Chemicum Britannicum, with annotations by Elias Ashmole, with introduction by E. J. Holmyard, M.A., D.Litt. London: Edward Arnold and Co. 1928. Pp. 125. 10s. 6d.

[2] Ann. de Méd., 1928, xxiii., 413.

conglomeratus. No red blood cells or tubercle bacilli were seen. On chemical analysis the sputum was found to contain 0·71 per cent. of albumin. In the third patient, owing to the absence of expectoration, the lung fluid was examined, and on microscopical examination numerous sero-albuminous droplets were found, together with red blood cells, occasional polymorphs, and some alveolar epithelial cells in varying stages of hypertrophy and degeneration. Mixed with the latter were dust particles and some macrophages six times as large as a red cell. These macrophages were vacuolated, with an eccentric nucleus and contained partly digested alveolar cells. As all gradations between the alveolar epithelial cells and the macrophages could be seen, Caussade and Tardieu felt justified in assuming that the latter developed from the former. The common factor in all three cases, and in their opinion the characteristic feature of Woillez's disease was the presence of sero-albuminous droplets either in the sputum or in the lung juice. It is a pity that they did not give the results of the microscopical and chemical examination of the sputum of control cases of classical lobar pneumonia, because the absence of sero-albuminous droplets in such cases would have added greater weight to their statements. Again, the possible presence of atypical pneumonia cannot be excluded merely on account of an oscillation of 1° C. in the temperature chart, nor yet because bronchial breath sounds cannot be heard over the affected area, especially when, as in the third case, the absence of sputum is explained by blockage of the air-tubes by fibrinous plugs. If the bronchi are so firmly plugged as to prevent the expulsion of sputum, it seems quite likely that the entry of air into the bronchi would also be stopped and that breath sounds would not be heard over the consolidated area. On the whole it may be said that Caussade and Tardieu have not presented any convincing data by which the *maladie de Woillez* can be differentiated from the atypical pneumonias.

NATURALNESS IN THE SPEECH OF THE DEAF.[1]

THIS Essay is a detailed survey of the lines most likely to ensure success in teaching speech to deaf children. The author has tackled the subject with thoroughness, founding his views on a careful study and comprehensive grasp of the fundamentals of phonetics and voice production. Patient experimentation and years of practical, sympathetic experience render him an authority on the many questions of education, technique, and psychology that are involved.

The promotion of the quality of naturalness of speech in the deaf is of primary importance, for upon their approximately natural and fluent speech depends their ability to communicate with their fellow men. The subdivisions of the Essay show the many-sidedness of the subject dealt with—breathing, voice, speech sounds, accent, phrasing, rhythm, speed, intonation being some of them. To impart an accurate and useful grasp of some or all of these branches to a deaf child is no easy task, and young teachers need all the help obtainable from others of riper experience, gained through study and practice. Mr. Haycock provides a handy book of reference, and the Appendix contains useful exercises in connexion with the subdivisions. The exercises are by way of suggestions, and are open to extension or rearrangement according to the need of the children and feeling of the teacher.

The author stresses the necessity of making use of the natural emotions of pupils, and this is a feature that must not be overlooked. Short exclamatory sentences are invaluable in the cultivation and preservation of good pitch and elastic, rhythmic utterance. The mentalities and dispositions of children vary enormously, but expressions of joy or sorrow, excitement or boredom, like or dislike are common to all and are natural aids in teaching. Artificial aids—e.g., mirrors, a piano, sensitive flame—have their use. Mirrors Mr. Haycock would employ as a corrective; they are easily available and their use is often fascinating to the child. A piano is not so common in deaf schools, but has its uses when available. Deaf children early become sensitive to vibration, and Mr. Haycock puts forward suggestions as to how this can be utilised to correct pitch and intonation. He mentions Dr. Scripture's flame-trainer as of proven value in many cases, but points out that it requires a teacher fully trained and skilful in its use.

The Essay is a real addition to the books helpful in the study and practice of the teaching of speech to the deaf child, and we are not surprised to gather that its author was rewarded with the Braidwood gold medal by the National College of Teachers of the Deaf.

[1] How Best to Promote the Quality of Naturalness in the Speech of the Deaf so as to Ensure Easy Intelligible Oral Intercourse with Those who Hear. An Essay by G. Sibley Haycock. C. G. Goodwin, The Mount, Stoke-on-Trent. 1928. Pp. 60. Post free, 1*s*. 3*d*.

THE KING'S ILLNESS.

OFFICIAL BULLETINS.

(*Continued from p. 58.*)

THE following is the text of the official bulletins which have been issued during the past week and signed by Sir Stanley Hewett, Sir Hugh Rigby, and Lord Dawson of Penn:—

WEDNESDAY, JAN. 2ND. 8.15 P.M.

The King has passed a good day, and there is a slight improvement in His Majesty's condition.

THURSDAY, JAN. 3RD. 11.15 A.M.

The King has passed a restless night and there is no change to report in His Majesty's condition.

8 P.M. The King has had a fair day and there is no change to report in His Majesty's condition.

FRIDAY, JAN. 4TH. 11.30 A.M.

The King has had a quieter night; the local condition shows slight improvement, while the general condition remains stationary.

8.15 P.M. The King has had a quiet day. There is no change to report in His Majesty's condition. (Signed by Sir Stanley Hewett and Lord Dawson of Penn.)

SATURDAY, JAN. 5TH. 11.15 A.M.

The King has had a good night, and there is a slight improvement in His Majesty's condition.

8.30 P.M. In spite of a restless day, the King's condition remains unchanged. No bulletin will be issued until to-morrow evening. (Signed by Sir Stanley Hewett and Lord Dawson of Penn.)

SUNDAY, JAN. 6TH. 8.15 P.M.

The King has had a quiet day and there is some improvement in His Majesty's condition. (Signed by Sir Stanley Hewett and Lord Dawson of Penn.)

MONDAY, JAN. 7TH. 11.30 A.M.

The King has had a fair night and there is no change to report in His Majesty's condition.

7.45 P.M. The King has had a quiet day. There is no change to report in His Majesty's condition. The next bulletin will be issued to-morrow evening. (Signed by Sir Stanley Hewett and Lord Dawson of Penn.)

TUESDAY, JAN. 8TH. 8.15 P.M.

The King has had a quiet day. The condition of His Majesty remains unchanged. (Signed by Sir Stanley Hewett and Lord Dawson of Penn.)

BOSTON CITY HOSPITAL.—The sixty-fourth annual report of this institution, which, in addition to the main hospital, comprises a contagious diseases department, a sanatorium, two relief stations, and a convalescent home, is exactly a year in arrear, the facts and statistics coming down only to Dec. 31st, 1927. The hospital, which is under the authority of the Boston City Council, spent £483,000, about £100,000 of which was recouped from ward and private-room patients. In-patients cost 17*s*. 3*d*. per day, and the cost of out-patients was 2*s*. 11*d*. per visit. The report contains several illustrations of the new nurses' home, one of which shows the nurses' "sitting-room" as a stately pillared hall, its polished floor strewn with rugs. The nurses have a large swimming bath and a dining-room with separate tables, each seating four. Almost all the out-patient departments clinics have been reorganised on an appointment basis, which is found to be well suited to the needs both of patients and doctors.